NOVEMBER 15, 1993
VOLUME SEVEN NUMBER FOUR
SEVEN DOLLARS

CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

SPECIAL SECTION

STRATEGIC OUTLOOK ON CONSULTING SERVICES:

Getting The Best Possible Fit When Buying The Emperor's New Clothes

ALSO INSIDE

How To Reskill The IS Workforce

Showtime Networks Inc.'s
Jerry Cooper

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i magine accelerating productivity and holding

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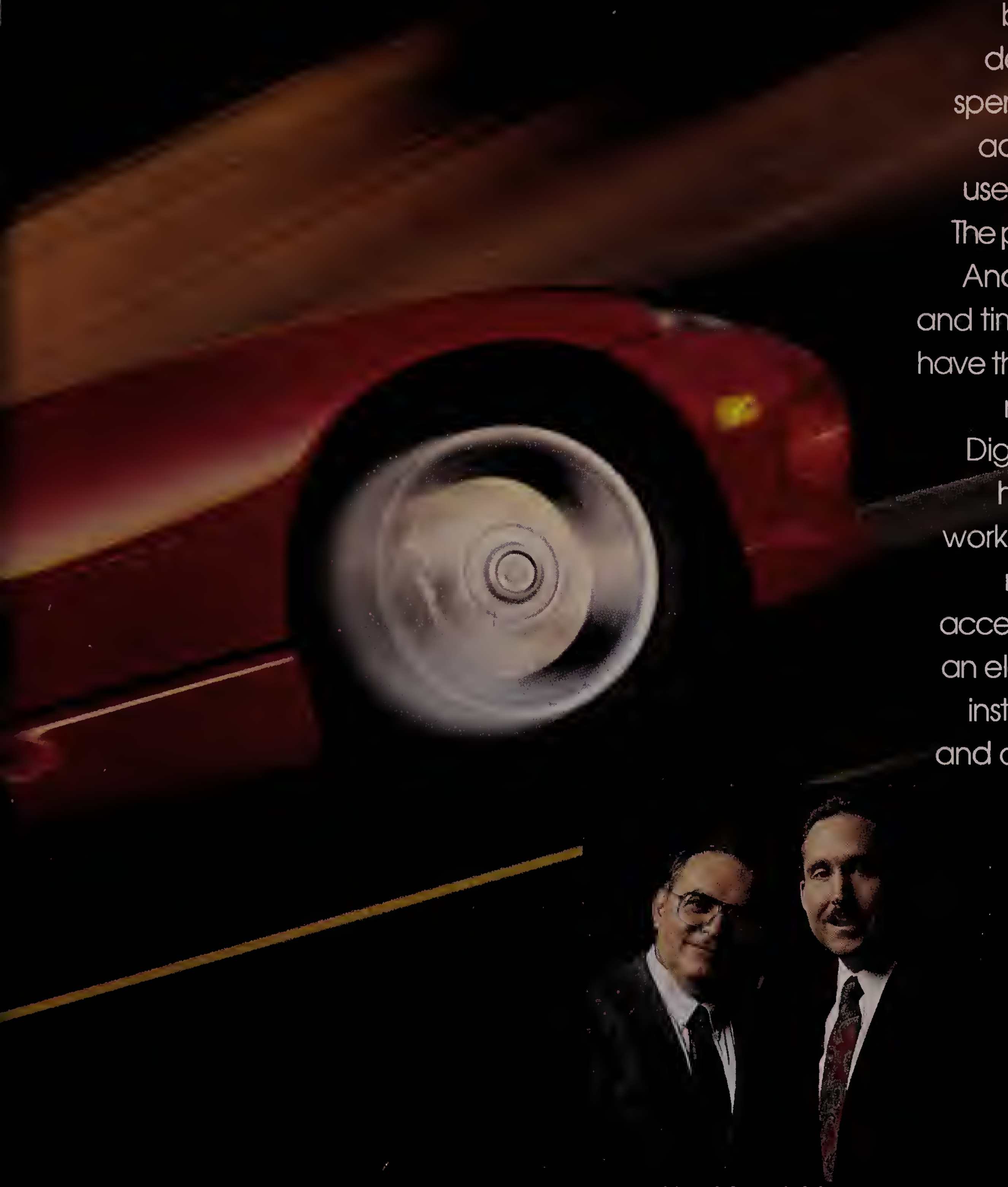

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CIO

VOLUME 7, NUMBER 4

STRATEGIC OUTLOOK **CONSULTING SERVICES** **29**

Improving Your Outside Chances **30**

Hiring an external consultant for an IS project creates a dilemma. While ceding control of many things, the IS executive remains ultimately accountable for the project's success or failure. The only way to make it work is to stay involved.

By Mickey Williamson

Working Relationships **42**

Companies that have managed successful consulting engagements, such as the three presented here, know that it takes planning, involvement and trust to make a project fly.

By Mickey Williamson

Making the Numbers **48**

In the consulting business, the pressure to say it in numbers is strong. The Gartner Group doesn't leave its performance up to chance.

By Mickey Williamson
and Lew McCreary

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Cover photo by Kent Hanson

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SECOND OPINIONS: WORKFORCE TRAINING **50**

A Decided Slant

The IS manager at GE Appliances is unshakable in his belief that business talents, not technology skills, will keep his staff from fading into irrelevance. A panel of experts comments on this unconventional training approach.

By Richard Pastore

Assigning the odds **48**

The business imperative **50**

MORE ►►►

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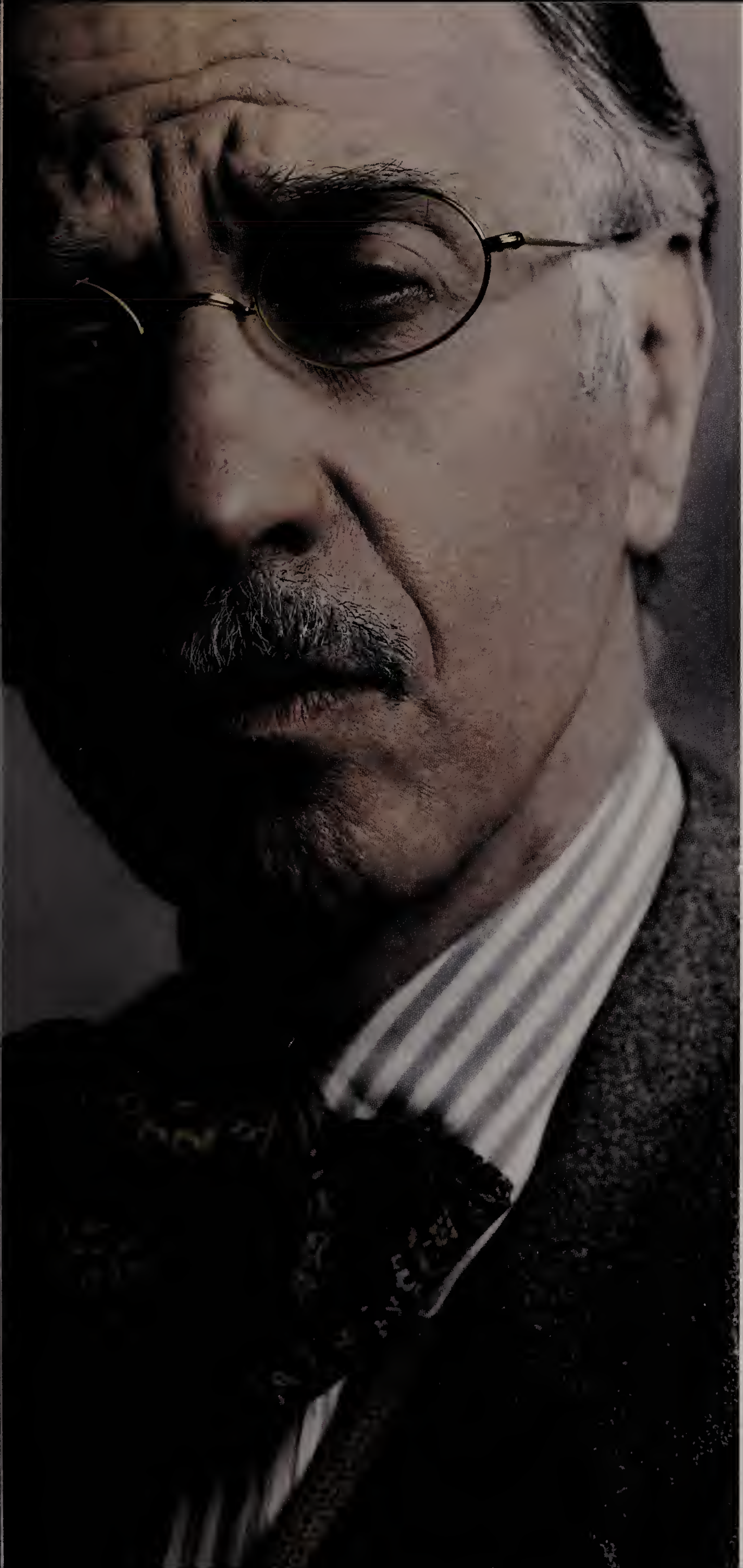

tions, and fare options. And because Sun servers link a worldwide network of 3,650 ticket terminals to a high-speed local network, every agent is able to torment the demanding with superior service. At a cost to Air France that is actually lower than before. ◆ And for customers like Emil Gaston, the urge to critique must find expression elsewhere. ◆ Unfortunately, for many businesses, it is a small world. ◆ More than 135,000 companies are using Sun systems, powered by the SPARC® chip and the Solaris® operating environment, to gain a competitive advantage. Air France is just one. To learn how you can benefit, call 1-800-426-5321, ext. 605.

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CIO

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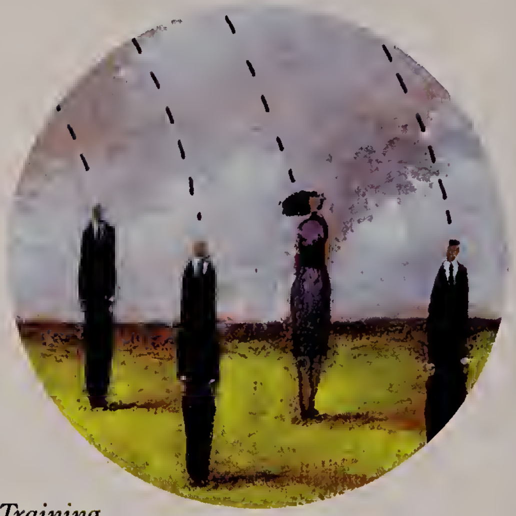
INSIGHTS: CHANGING COURSES

Chicago-area CIOs can offer workers practical training cheaply, quickly and locally, thanks to a new education initiative.

By Richard Arns



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By Ronald V. Rose

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WORKING SMART: WORKING ON THE RAILROAD

Improving rail service these days has as much to do with communications as it does with locomotion.

By Megan Santosus

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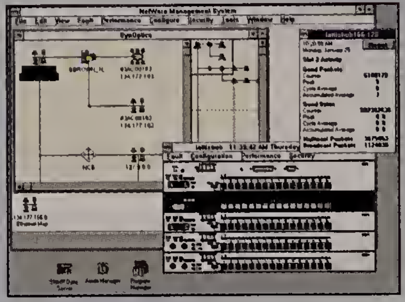

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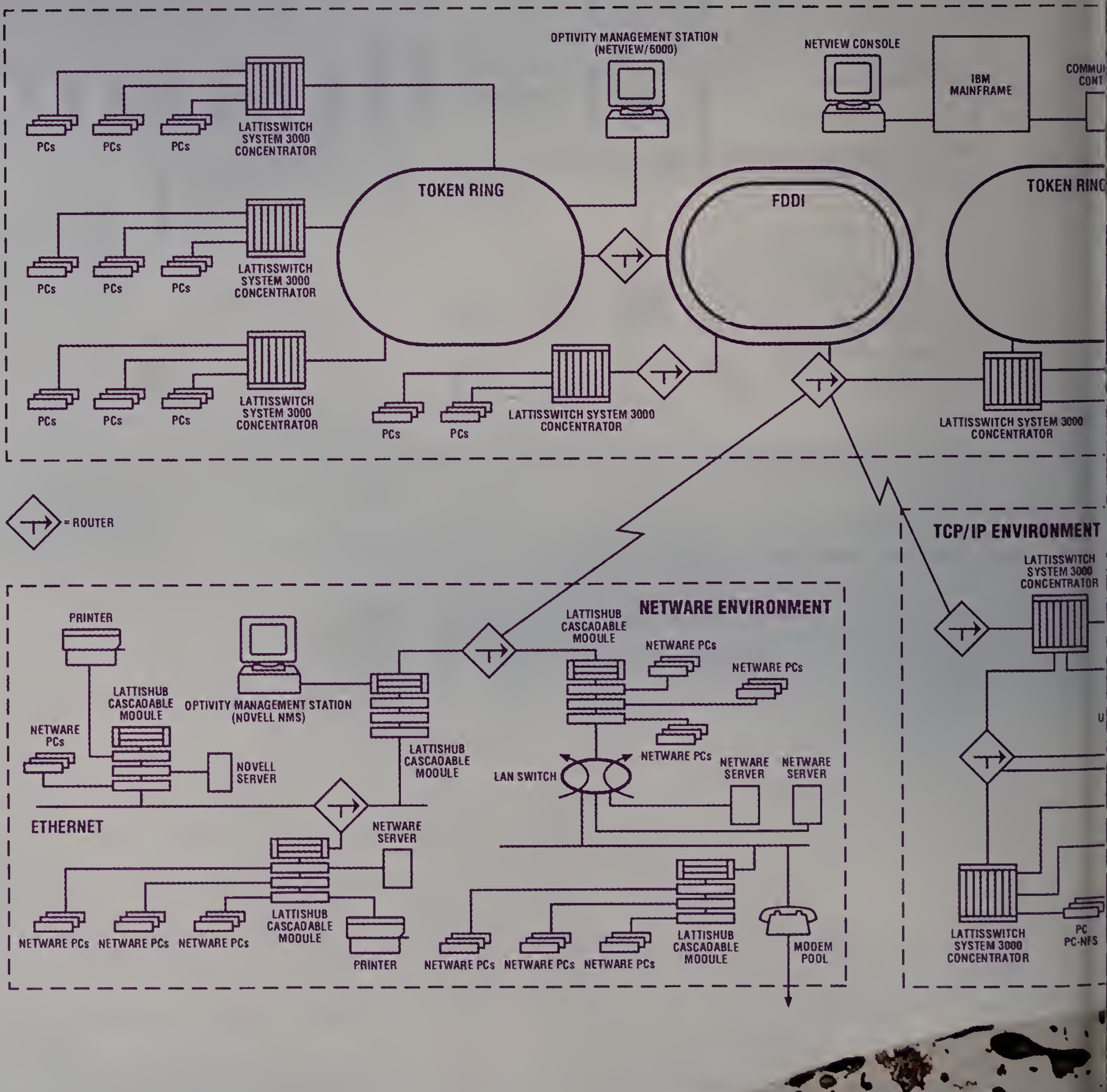

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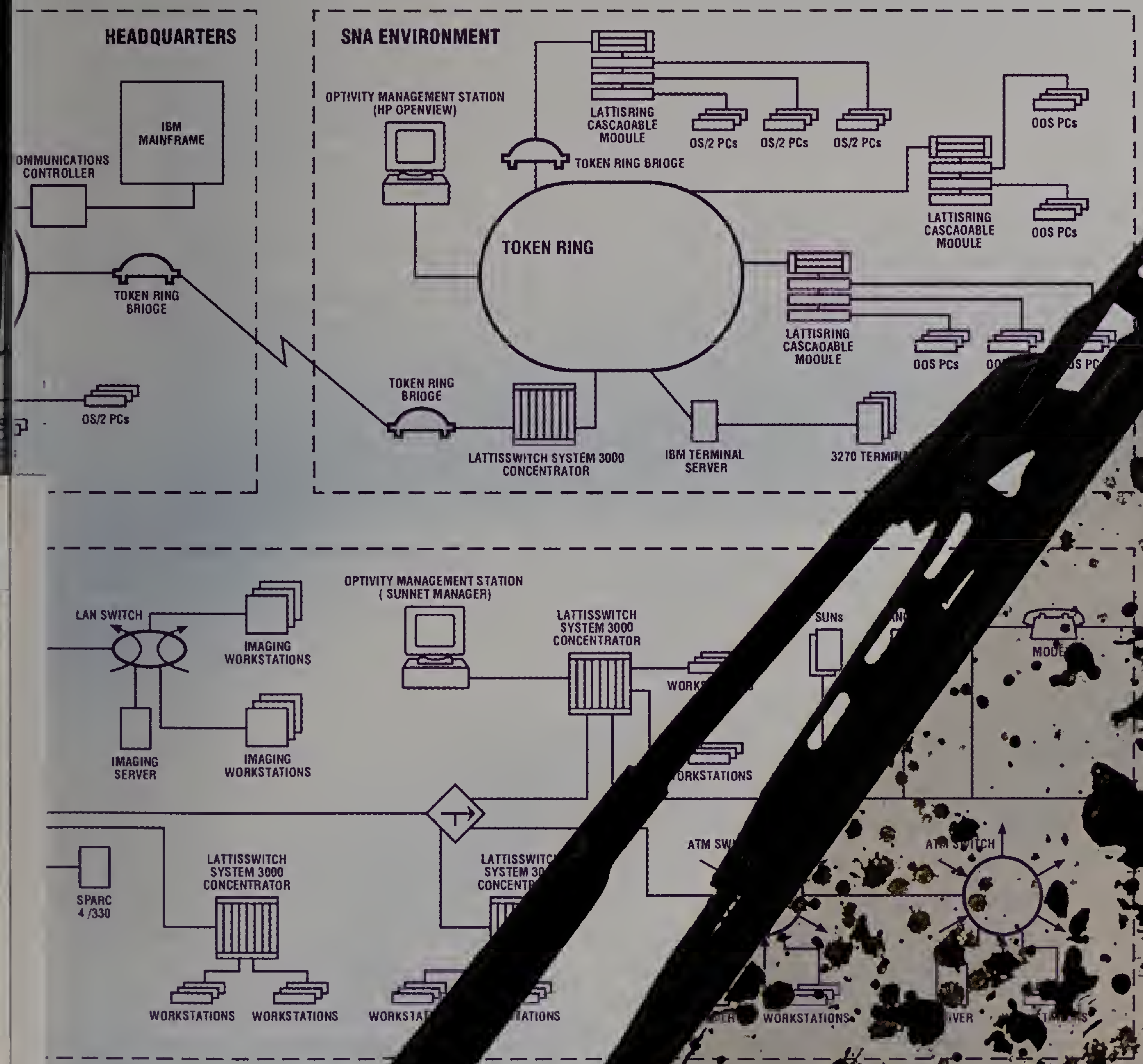

LETTER FROM THE EDITOR

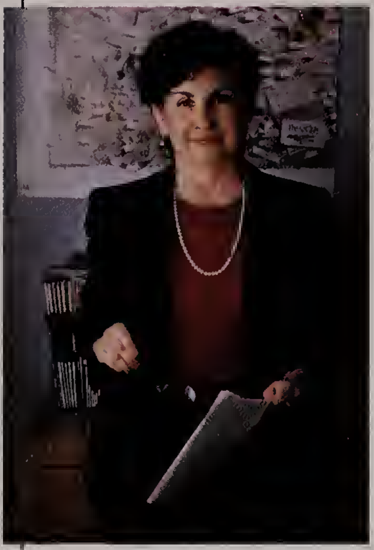
PHOTO BY WEBB CHAPPELL

The need for IS professionals to think and communicate about the enterprise in business terms has been talked about for a long time, but it is particularly acute today. At GE Appliances, the business skills of IS staff are being broadened to the point where staff members will have less technical expertise than their peers in other firms. In this month's Second Opinions article, the information executive there wonders whether this is an appropriate tack to take. (Please see "A Decided Slant," beginning on Page 50.) Senior Writer Richard Pastore polls Xerox's Pat Wallington and Summit Information Systems' Gerry Long, among others, to provide insights into this concern.

Wallington and Long agree that developing business skills is a must for IS professionals, but they strongly advise that a balance between business acumen and technical skills be maintained.

Both Wallington and Long tie the reskilling process to the quest for quality at their firms. They both emphasize the importance of defining critical skill sets for IS personnel. Some of these skills are business-related, and others are technical. They also stress the need for IS personnel to identify their own skills and measure themselves against the company's skill-set guidelines. IS personnel should take a participative role in determining their skills inventory and the training they will need to attain new skills for the future.

An increasingly important way of relating IS to the enterprisewide strategic vision is showing that IT does have a measurable impact on an organization's bottom line. This is the idea behind the first annual Return on Investment from Technology (ROIT) awards, sponsored by *CIO* Magazine and Booz-Allen & Hamilton. Recently, the judges chose six award recipients based on both the quantifiable payback of their systems and the demonstration of a strong partnership between the IS department and the business unit for which the application was developed.

The winners are AT&T's Universal Card Services, the City of Chicago's parking-enforcement management system, Complete Health Services Inc.'s integrated health-care management system, Los Angeles County Department of Public Social Services' AFIRM fraud-prevention system, South Florida Water Management District's geographical information system, and SynOptics Communications Inc.'s integrated information systems architecture. All developed IT solutions that matched the strategic objectives of their enterprises. The complete stories of these six organizations will be featured in our January 15 issue.

Marcia Blumenthal

CIO

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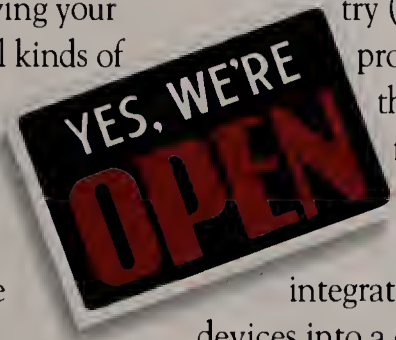

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PHOTO BY WEBB CHAPPELL

The foundation of successful client/consultant relationships is "an open, candid communications environment in which both parties can totally level with each other. You need to be able to talk about the good, the bad and the ugly, with no one on either side feeling threatened."
–Dale Wartluft
National Director
Systems Planning & Delivery
Ernst & Young

Dale Wartluft's viewpoint is shared by many of the IS executives and consultants who related their war stories for *CIO*'s Strategic Outlook on consulting services. In collecting their experiences, we noted a commonality of ingredients required for a successful relationship resulting in a project that meets the client's expectations. Some of the more-critical components of these partnerships are as follows:

- The CIO and key people in the organization must define the scope of the project and the business problems to be solved before a consultant is hired.
- A CIO sponsor must be committed to and actively involved in the consulting project from start to finish; passing off project management to someone else can lead to failure.
- The CEO and top management must fully support the project and feel comfortable with the consulting team.
- Both parties must have a clear understanding of the project's objectives and share a vision of anticipated results and benefits. This vision, in turn, must be communicated throughout the organization.
- The consultant must provide a detailed plan that defines the scope of the project, major milestones, critical success factors and the steps needed to achieve its goals. This plan must be checked and rechecked by the CIO and consultants throughout the project.
- The consulting team must have access to end users to ensure the usability and effectiveness of new systems being developed.

Many thanks to all of our sources for sharing their experiences. This kind of candid information should certainly help both those who seek—and those who deliver—outside expertise.

P.S. Please join us at the next CIO Perspectives Conference, "Revisioning IT: Achieving an Enterprise Perspective," to be held March 13-16, 1994, at the Hyatt Grand Cypress in Orlando, Fla. For more information, call our toll-free hot line at 800 366-0246.

Coming In CIO

. . . .

Are We There Yet?

Just two years ago, most CIOs could have convincingly made the case that moving to open systems was risky and of uncertain benefit. Today, most companies aren't asking if the CIO can get them to open systems; they want to know how long it's going to take. The perception that large-system, proprietary environments are on their way out has left many CIOs feeling they are behind the eight ball, with no clear way out of their predicament.

. . . .

Outsourcing's New Outlook

The exodus to distributed systems, expanding customer clout and increasing competition are taking their toll on the traditionally rigid, 10-year mainframe-processing contract. These forces have given rise to shorter-term, "transitional" contracts that help IS shops manage the migration to new platforms. *CIO* talks to some companies that have turned over their legacy-system burdens to transitional outsourcers.

. . . .

Cooperative Ventures

The basic idea of a strategic marketing agreement is that two companies join forces because each has something that the other needs. The result, by rights, should be a new product or service that customers find highly desirable. But in today's imperfect world, things aren't always that simple. *CIO* examines the anatomy of a joint-venture agreement.

What you really want is the goose.

Once upon a time, you could set a well defined goal, direct the organization towards it and if all went well, plop!, out came the desired result.

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TRENDLINES

SYSTEMS MAINTENANCE

WHAT'S HOT, WHAT'S NOT

Even before its debut next year, Boeing's 777 has probably garnered more publicity than any plane since the Concorde. Completely computer-designed, the project is supported by 3-D workstations and linked databases connecting thousands of designers, engineers, mechanics, customers and customer-support personnel.

Design of the 777—as well as operation of Boeing's automated spare-parts system—relies on the company's mainframes, housed in an enormous computer center in Washington state. To protect these vital resources, Boeing has implemented an ambitious predictive maintenance (PM) program designed to increase equipment life, carry out performance testing and reduce unplanned downtime, inventory and time-driven maintenance.

One unusual aspect of Boeing's PM program is that it started out with infrared (IR) imaging rather than the more-traditional vibration analysis. "Infrared seemed the logical first step for us because an uninterrupted power supply is our primary need," says Jan Alfiere, facilities maintenance and operations manager for Boeing Computer Services. "An electrical failure will almost always impact on our computers, which have no backup yet have to keep running."

Alfiere's crew uses a system from AGEMA Infrared Systems Inc., in Secaucus, N.J., to scan for hot spots on the computer center's critical electrical components. They also use it to check the switchboards for the center's emergency generators, which take over within eight seconds of a power loss and can run indefinitely.

Problems detected by the IR system are usually fixed on the spot—so long as they involve equipment for which there is backup. If the problem affects a component for which there is no backup, the inspector will record it on the IR system's built-in floppy disk drive for review by Alfiere the next morning—or immediately, in the case of an emergency.

"It's difficult to assign a dollar value to how much our IR inspections have saved us in avoiding equipment damage and lost productivity," says Alfiere. "But the last outage we had is estimated to have cost us nearly $100,000 in lost workstation hours alone. Just enabling us to avoid a relatively 'minor' problem like that would more than justify the cost of

SPEAK OUT AND TOUCH SOMEONE

And you thought the Clapper was cool. But the benefits of being able to turn on your lights without touching a switch pale before the possibilities inherent in being able to dial your telephone without touching a button.

Like the ability to program certain numbers into your phone, voice-activated dialing is a boon to people who are in a rush, have bad memories or detest wrong numbers. But voice-activated dialing has the added benefit of security—the system only responds to a voice it has been programmed to recognize. And it can be used by people with disabilities, who might have trouble dialing a phone.

Communications company Ameritech, which plans to offer voice-activated dialing to its customers in the Midwest, has set up the service in the homes of 100 of its Chicago-area employees. Each family member can enter a personal directory of names and numbers, up to 70 per household. To place a call, the user picks up the telephone and says, for example, "Call Mom." The voice-activated-dialing system recognizes the name and dials the appropriate number. Speaker-dependent voice-recognition technology makes each personal directory secure.

The system is based on Texas Instruments Inc.'s speech-capability technology and Tandem Computers Inc.'s fault-tolerant Unix system. Ameritech also hopes to offer other voice-activated functions, such as call-waiting and call-forwarding. ■

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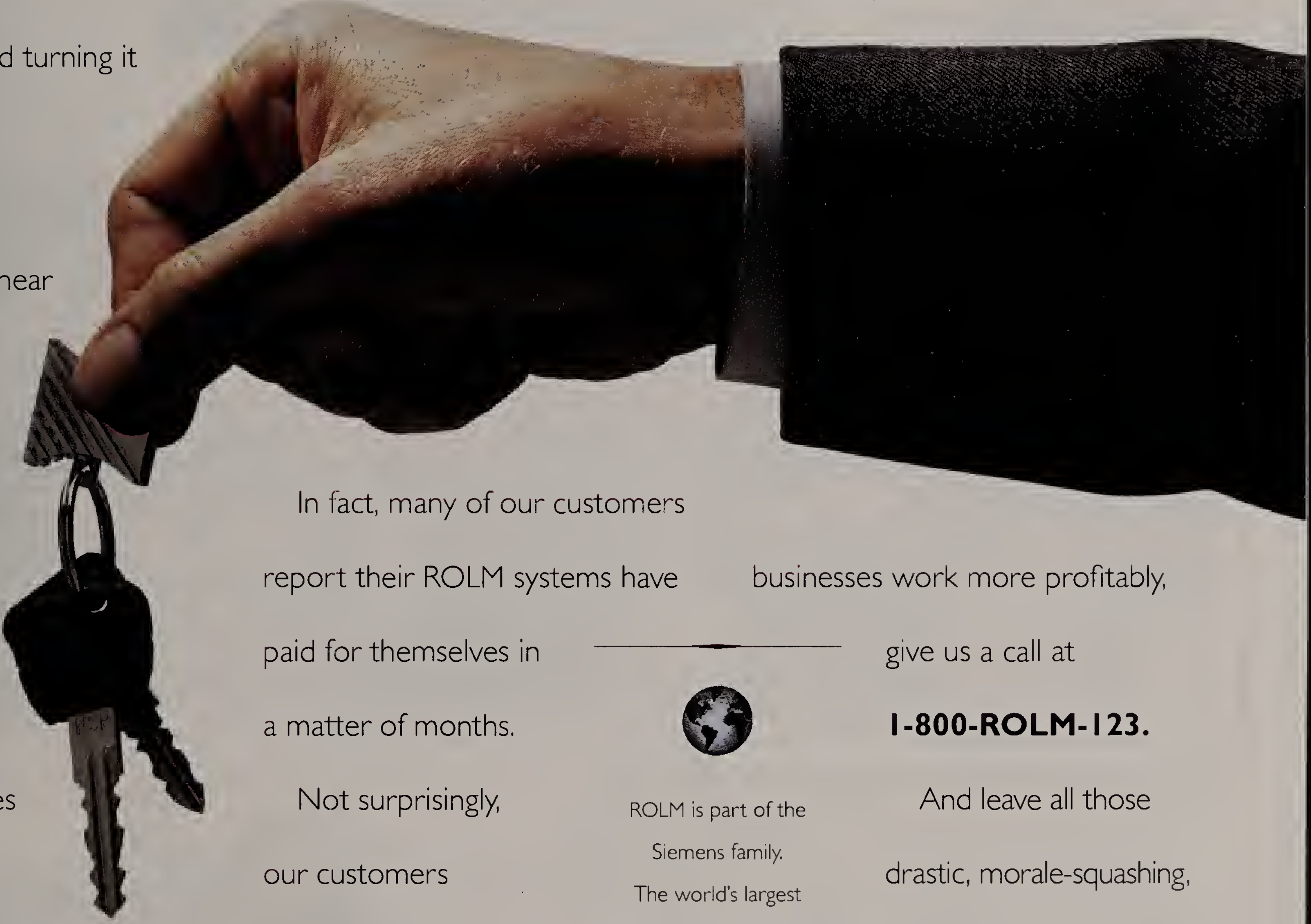

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TRENDLINES

the camera."

Alfiere also uses the IR system to check the power feed associated with any installation of new equipment or reconfiguration of existing equipment. "The floppy disk drive lets me do trending," he explains. "I can compare an image of the circuits supporting a new installation with a previously recorded 'baseline' image of the same installation to make sure that we haven't created an overload situation." ■

BARBARIANS ON THE GREEN

Do not judge a businessman until you have walked 18 holes in his golf shoes.

That's (sort of) the conclusion of a study of business executives and golf conducted recently by Hyatt Hotels & Resorts. Nearly half of the 401 executives surveyed agree that the way people conduct business affairs is reflected in their golf games.

For example, more than one-third of those who admitted cheating at golf also admitted to cheating in business. And nearly half of those who like challenges in the boardroom—you guessed it!—also look for challenges on the green.

But golf does more than simply hold a mirror to the corporate soul. Ninety-three percent of respondents say that playing golf with a business associate helps build a closer relationship; 80 percent agree that it is a good way to make new business contacts, and more than one-third say that some of their biggest deals were made on the golf course.

Other meaningful findings:

Although most respondents agree that playing golf is a good way to relieve business stress, more than half have thrown or broken a club after a bad shot.

More than half admit to calling in sick or leaving the office early to play golf, and the same number say they daydream about golf during meetings.

Twelve percent of respondents agree with the statement, "Golf is more important to me than sex." ■

SEXUAL HARASSMENT

PC PROFANITY

The publicity surrounding the alleged misconduct of Clarence Thomas and Bob Packwood have made sexual harassment a charged topic in the workplace. Whether harassment is more common or simply more visible is open to debate, but one thing is for certain. These days it is becoming high-tech.

We all know that electronic communication isn't just for work: People use public bulletin-board services and company E-mail systems to chat, exchange views and even date. But as more people move online, it follows that many of humanity's less socially acceptable proclivities will also find their way into electronic expression.

A recent *USA Today* article cited the example of a University of Illinois speech

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THIRSTY BARBARIANS ON THE GREEN

It's 90 degrees, you're stuck in a sand trap, and the clubhouse isn't even a speck on the horizon. The woman you're playing with is a hot sales prospect, but if she doesn't stop humming that stupid song you're going to bean her with your mashie. You need a beer. Bad.

Help is on the way. Thanks to a new vending technology, you will soon be able to buy drinks from your golf cart before the 18th hole.

The Golfer's Oasis, a coinless, computerized vending machine from USA Entertainment Center of Wayne, Pa., will be rolled out to golf courses nationwide over the next five years. Two types of vending machines are housed together in a protected wooden enclosure; one dispenses beer, and the other, upscale sodas and juices. The machines, which operate via wireless technology, accept credit cards; transactions take only six seconds, which is important if someone behind you is demanding to play through. And don't worry about your underage caddy—sales of beer are monitored from the clubhouse by a video camera and two-way intercom. ■

ILLUSTRATIONS BY JAMES KACZMAN

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professor confronted with the image of a pair of breasts—constructed out of punctuation marks—on her computer screen. Then there was the writer who began receiving rape threats over her E-mail after making some anti-sexist remarks in a computer discussion group. Both women feared that the seemingly bias-free world of computing—PCs can't leer or pinch—is becoming as threatening to women as some traditional offices.

What happens when electronic communications begin offending people's sensibilities, particularly in the workplace? Do businesses need to institute rules for courteous computing?

Mike Goodwin, legal-services counsel at the Washington-based Electronic Frontier Foundation, says that when it comes to online harassment at work, current sexual-harrasment laws already have things covered. "You don't have to have a media-specific regulation for this," he says. "Say somebody works in a computer laboratory and uses a sexual image as a screen dimmer. That's already addressed by current law."

Charles Darnell, CIO at Lithonia Lighting in Conyers, Ga., says that the policy his company has in place is quite specific and applies to all types of media—electronic or otherwise. "I don't think we need policies relegating computers to special places," he says. "If it's inappropriate behavior, it ought not to be done at all—on a computer, a video or drawn

MOBILIZING FOR MOBILE

Mobile computing is upon us, and IS managers are going to get caught with their pants down if they don't start thinking about what that means for their organizations.

That's the message of a recent report from Forrester Research Inc. of Cambridge, Mass., which attempted to quantify the encroachment of mobile devices upon corporate America. According to a survey of Fortune 1,000 IS managers, the average large company today has 641 mobile computers of various types; by 1994 that number should more than double. Yet IS executives have few clear plans for dealing with these devices: 26 percent of respondents say they have no idea who will manage their mobile computers in three years.

"Over the next three to five years, large companies will be forced to look at PC mutants—subnotebooks, PDAs and specialized handheld devices—as essential platforms for new profit-making corporate applications," says Neal Hill, a senior analyst at Forrester. "And most MIS departments haven't begun to think about the consequences."

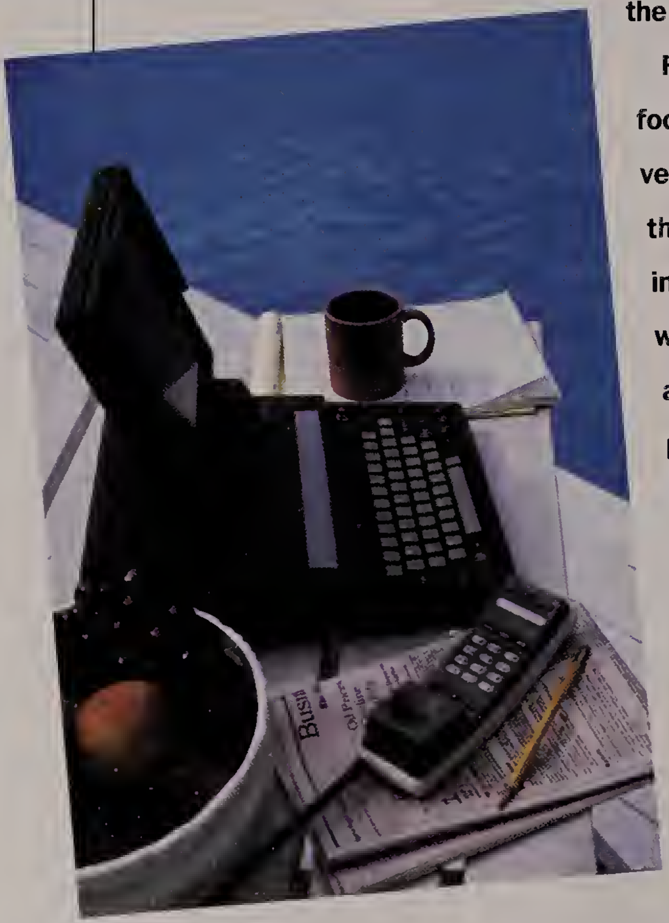

PHOTO © COMSTOCK INC.

Forrester advises IS to focus on application development and building the communications infrastructure, while working with vendors and business-unit support teams to address specific geographical issues. "This will be a wrenching change for MIS," says Hill. "But [it] will pay big dividends in corporate competitiveness."

CAREER MOVES

Turner Broadcasting System Inc. has appointed ELAHE HESSAMFAR vice president and CIO. A member of the company's executive committee, Hessamfar is responsible for formulating strategies, integrating new information systems and building a global data-communications network.

SHL Systemhouse Inc. has promoted JOHN D. HEALY to vice president and general manager of national systems. He will be responsible for directing the systems-integrator's business activities focused on state- and local-government opportunities.

DAWN GOULD LEPORE was recently named executive vice president and CIO for The Charles Schwab Corp. A 12-year veteran of the company, she will be responsible for all systems applications and development and telecommunications activities.

DENNIS H. McPOLAND was appointed vice president of systems and projects at Skyway Freight Systems Inc., an integrated logistics operating company. McPoland will analyze market opportunities, guide project teams and oversee technology solutions for internal and external customers.

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on the wall."

When such activity occurs outside the workplace, however, the law gets fuzzier. For example, sexual images can be downloaded off the Internet. Harassment? "No," says Goodwin, "because you don't get that stuff unless you go after it." But that does not apply to the five University of Oregon women who were sent such images by the male Internet users who retrieved them.

Still, while Goodwin recognizes that current sexual-harassment laws are mostly designed to reach the workplace, he does not see the need for more regulations. "There's hardly ever a case when somebody has acted egregiously where there is not already a remedy in place," he says.

CIO GETS WITH THE PROGRAM

***Technology Edge*, a new weekly program produced by NBC's cable station, CNBC, features case studies moderated by *CIO* magazine editors. Sponsored by Sequent Computer Systems Inc., *Technology Edge* can be seen at 5:30 p.m. on Saturdays.**

Each half-hour program is devoted to a single topic: a general information-management issue, such as reengineering, or an emerging technology, such as multimedia or wireless computing. The programs kick off with a general overview of the subject—how it works, how it is being used and to what effect. A panel discussion among leading experts follows, and the program wraps up with a case study featuring an IS executive whose organization has experience with the methodology or technology in question.

Like articles in *CIO* magazine, the case studies demonstrate the specifics of how an IS executive solves a particular IT problem. One of the first shows discussed reengineering and featured a conversation with Xerox Corp.'s Vice President and CIO Patricia Wallington.

***Technology Edge* is targeted at information executives, but it is also designed to appeal to business executives interested in the benefits IT can deliver to the enterprise. To date, case-study segments have been moderated by *CIO* Editor-in-Chief Marcia Blumenthal and Senior Editor Thomas Kiely. "It's really gratifying to know that the IT message is appealing enough to be of interest to the television media," says Blumenthal.**

OFF THE SHELF

MANAGING ACROSS BORDERS

THE TRANSNATIONAL SOLUTION

**Harvard Business School
Management Programs
Boston, 1993
Three tapes (223 minutes)
$3,475**

What is a company profited, if it should gain the whole world and lose its competitiveness? Not much, and that's why organizations going global must learn to act and think like the world players they have become. In *Managing Across Borders*, a recent addition to Harvard Business School's video series, Professors Christopher A. Bartlett and Sumantra Ghoshal guide senior managers of international companies in identifying new capabilities that can help their organizations remain competitive.

Flexibility, Bartlett and Ghoshal contend, is the critical success factor. International organizations must simultaneously integrate global operations, respond to diverse local markets and rapidly disseminate learning and innovations worldwide. Achieving this feat—which Barlett likens to being able to walk, chew gum and whistle at the same time—is what becoming "transnational" is all about.

Managing Across Borders is largely based on the results of a five-year study of how several leading international companies adjusted to marketplace changes. Organizational capability, the professors discovered, is the ultimate determinant of success. Successful transnationals have an integrated network structure supported by the flow of information, products and resources. The most-suitable management approach must be identified for each business unit, function and task.

Bartlett and Ghoshal stress the importance of creating vision, values and a common cultural identity that serve as the "glue" holding together a diverse organization. Ghoshal also cautions against discarding tried-and-true management practices that enabled the company to grow into global powerhouses in the first place.

The videos feature concise, insightful interviews with executives at global companies. Top managers at Corning, Becton Dickinson, Unilever, ABB and NEC discuss the social, political, competitive and technical forces driving their organizations to change and the strategies they are using to adapt.

The purpose of *Managing Across Borders* is not to promote specific management philosophies but to introduce new ways of thinking about managing a global corporation. In this respect, the program delivers.

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Bartlesville Associate Superintendent Bill Beierschmitt says, "We've had as many as 14 teachers taking OSU evening classes on the video network, working toward their Masters' degrees in Education. In fact, we are using this as a recruiting tool for new teachers."

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Changing Courses

Chicago-area CIOs can offer workers practical training cheaply, quickly and locally, thanks to a new education initiative

BY RICHARD ARNS

IS plays a decisive role in a company's success. Technology touches nearly every aspect of strategic planning, intercompany communication, customer service, marketing, sales and manufacturing.

If a company depends on IS to champion its business success, then IS depends on its people. The Chicago Research & Planning Group, an organization providing networking opportunities for CIOs at Chicago-area Fortune 500 companies, has launched an initiative to retool the IS workforce through a partnership among member companies, academia, professional trainers, and hardware and software vendors.

The CRPG's educational effort was necessary for several reasons. First, classes covering new technologies traditionally have been taught by vendors and have been prohibitively expensive. Any one of our members may spend $500,000 to $1 million annually on travel for training purposes alone. Prior to the CRPG's education initiative, they had little choice.

The costs of in-house training are also increasing, even as training budgets tighten. These costs include salaries for trainers and the expense of facilities, equipment, support staff and other overhead.

Second, training personnel often report to other parts of the organization. This can muddle lines of communication and make it difficult for the training organization to respond rapidly when reskilling needs develop. Trainers outside of IS also may not agree on the firm's priorities or understand its future directions.

Third, college-level computer-science programs do not adequately prepare graduates to perform the kinds of tasks necessary in a real IS department. While students may understand the concepts behind productivity tools like file servers, networks and image processing, they don't know how to use the tools themselves in the workplace.

Frank Diaz, president of Kemper Service Co., a division of Kemper Financial Services Inc. of Chicago, expresses the concerns of many CIOs: "It takes six months to retrain college students. Colleges don't teach what we need. They don't have the money and, in some cases, the resources." Good trainers, whether in-house or in academia, must be knowledgeable and passionate about training, Diaz believes.

Lastly, inconsistent training quality produces inconsistent results. With no standardization or certification procedures in place, it is difficult to measure training productivity.

In formulating its approach to reskilling IS personnel, CRPG staff asked themselves two questions: What skills do IS employees really need in order to improve productivity, and how can we give them those skills?

ILLUSTRATION BY DAVE CUTLER

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In order to answer the first question, the CRPG surveyed its membership about their skill needs. Respondents identified more than 100 areas where trained personnel were required, including object-oriented methodology, relational-database management and design, client/server methodologies and Unix.

According to Peter Miller, corporate senior vice president of the securities services department of First National Bank of Chicago, core technical talents are not the only important skill sets. He cites softer skills like managing employees and dealing with customers as being equally useful. "Future IS employees will combine several disciplines: technology, finance, marketing, production and sales," Miller says. "This minimizes the distance between the IS department and the rest of the company and enhances the IS employee's value."

CRPG is trying to influence the traditional academic curriculum so that it better represents real life.

The CRPG is reskilling the IS organization of its membership in a four-phase initiative, which it hopes to have fully implemented within two years. The phases are:

- **Shared training resources.** The Education Training Consortium (ETC) helps IS staff at member companies "share" education by cross-training at other member sites. CRPG members have saved time and money by availing themselves of the more than 100 courses offered through the ETC. For example, a course on CICS concepts, which would normally cost $395 per student if taught by a vendor, is only $125 through the ETC.

Courses are offered by an in-house instructor at a member company, or by a professor or other outside trainer. The reduced cost is made possible by volume discounts; participants save even more money in travel expenses because courses are offered in the Chicago area. The amount of class time and quality of instruction are equivalent to vendor courses.

- **Rapid Education Development pilot.** The RED pilot constitutes a new approach to the delivery of IS education and training. Last February, the CRPG began initiating relationships with major colleges and universities throughout the Chicago area. Together, these organizations are identifying their roles, course needs and curriculum outlines. Five main areas of curricula identified for concentration are mainframes, networking, LANs/PCs, project management and mid-range computing.

When member companies develop training needs, RED facilitates the delivery of that training through a central communication center, which contacts participating schools to determine course offerings. Data on

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available courses, sites and costs are transmitted from the center to the CRPG member company requesting the information; the center then facilitates course registration. (A monthly guide listing vendors' course offerings and their costs will also be distributed to members.)

Cooperation between industry and academia also benefits research faculty, who get an opportunity to showcase R&D efforts in subjects such as virtual reality, metacomputers and object-oriented code. As Bernie Ferrari, vice-chancellor of City Colleges of Chicago, points out, academia has room for improvement when it comes to meeting IS's technical needs. Technology is changing so quickly that it is as difficult for higher education to keep up as it is for business. By partnering with the CRPG in designing and offering IT curricula, colleges and universities are forced to become state-of-the-art.

- **Vendor support.** The CRPG recognizes that establishing measurable criteria for the testing and certification of course attendees brings much greater precision to the labor pool. So the organization is working closely with major vendors to architect standardized testing and accreditation for students and instructors of IT, and for IS staff undergoing training. Because they offer courses in new technologies, hardware and software vendors are key players in these efforts. The vendors are also working with the CRPG to come up with new ways to prepare nonvendors to teach courses in specific technologies—primarily at educational institutions in the Chicago area.

- **Delivery methods.** Eventually, the CRPG will provide member companies any type of training they require, regardless of where it is being conducted. If a conference on the latest client/server technology is being held in Germany, the organization will offer it to members and participating academic institutions through teleconferencing. The CRPG's goal is to make technology training immediately available, cost-effective and convenient for its members. Eventually, all members will be connected to each other and to the communication center via common online communications software. This link will provide the working mechanics for ongoing brainstorming, online registration with universities and research exchange.

Every new type of hardware, software and business process brings with it the need for new skills that must be mastered and applied in daily IS operations. Lack of IS education and training can delay or prevent implementation of the latest—and often most beneficial—technologies. Under the CRPG's education initiative, existing IS staff at member companies and new hires fresh from Chicago-area colleges will be able to use this new technology to its fullest.

Richard Arns is executive director of the Chicago Research & Planning Group of Barrington, Ill.

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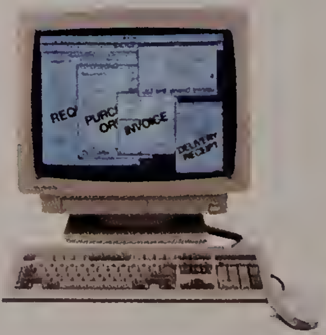

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CONSULTING SERVICES

AN OUTSIDERS GUIDE

The client/consultant relationship has a lot riding on it. At stake in many cases are high-profile, big-bucks projects that can make or break a career (usually the CIO's) or do significant damage to a company's operations. Those who have been there agree: It is absolutely essential to stay on top of the project and be its champion at every step of the way. Communication—across the table with the consultants, up the ladder to the CEO and throughout the organization—is one of the IS executive's primary responsibilities.

Improving Your Outside Chances
Hiring an external consultant for an IS project creates a dilemma. While ceding control of many things, the IS executive remains ultimately accountable for the project's success or failure. The only way to make it work is to stay involved.
PAGE 30

Working Relationships
Profiles of three companies that have managed successful consulting engagements show that it takes planning, involvement and trust to make a project fly.
PAGE 42

Making the Numbers
The Gartner Group doesn't leave its performance up to chance. Not only does it assign probability figures to its predictions; the analysts themselves are subjected to a variety of metrics.
PAGE 48

CONSULTING SERVICES

IMPROVING YOUR OUTSIDE CHANCES

Hiring an external consultant for an IS project creates a dilemma. While ceding control of many things, the IS executive remains ultimately accountable for the project's success or failure. The only way to make it work is to stay involved.

BY MICKEY WILLIAMSON

To this day, the information systems director—let's call him Earl Barr, because that's nothing like his real name—is still embarrassed about his role in the fiasco. "I knew exactly where I wanted to go, and I had some sense of how to get there, but neither I nor anyone else in my organization had the expertise to make it happen, so I went to an outside consulting firm," he confesses. "Basically, I said, 'This is where I want to be,' and they said, 'Sure, no problem. We'll get you there.' " Time passed and money changed hands, and one day Barr found himself presented with an application system nothing like the one he had envisioned. Confronted, the consultants explained, " 'We went around and talked to people and found that really wasn't the right objective,' " Barr recalls.

He blames himself. "I didn't know enough, nor did I have the time, nor did I feel that it was my job to monitor the day-to-day activities of the consulting firm doing the job," he says. The lesson, Barr adds, is this: "If you let the consultants run the project, you're going to get what the consultants want, not what you want."

Barr learned the hard way what executives like Jerry Cooper cite as a basic principle of dealing with consultants. "You've got to

ILLUSTRATIONS BY KEVIN HAWKES

"THE CLEARER the definition of the problem and the expected results, the better off both parties are going in."
–Raymond T. Hall

be on top of the project all the time," says the senior vice president and CFO for Showtime Networks Inc., a cable-television programming supplier in New York. "You can't just hire a consultant and say, 'Call me up when it's finished.' "

Maintaining control over project scope and definition is just one facet of staying involved, notes Dennis Klinger, vice president and CIO at Ryder System Inc., the Miami-based transportation-services company. Part of his role during a consulting engagement, Klinger says, is "to make sure that roadblocks are broken down very quickly. If you don't help pave the way, even the best, most well-meaning of consultants will have a hard time getting access to the right people. Then the length of the project increases and the bill goes up."

Barr's prefiasco attitude is all too common, according to Dale Wartluft, Chicago-based national director of systems planning and delivery at Ernst & Young. "Too many times, the client's expectation is that the project's success is [the consultant's] responsibility, but it's a two-way street to make it work," he says. Faced with a disinterested client, Wartluft will try to do a little educating. "I'll try to get them to take their [share] of the responsibility as well, because it's very unlikely that I can succeed in a vacuum."

Besides the need to take responsibility for how the consulting project turns out, experts on both sides of the relationship agree there are four keys to success: having clear objectives, finding the right consultant, making sure both parties have the same vision of a successful outcome and keeping all the relevant people informed. Whenever possible, it's a good idea to draw up a list of objectives—or at least a state-

The Pitfalls

Achieving a successful outcome from consulting projects requires consultants and clients alike to keep a sharp eye out for hidden dangers. The following situations should set off warning bells as a project gets underway.

CONSULTANT ALERTS

Situation: **A senior executive hires the consultant, then hands off coordination responsibility to someone at the next, lower level.**

Danger: **The coordinator could block communication between the consultant and key people in the company, hoping to take all the credit, perhaps to advance a hidden career agenda. In this scenario, "at the end of the project, the consultant hasn't delivered what the senior executive wanted, because the consultant never had a chance to check things out," says Robert E. Nolan, chairman of Robert E. Nolan Co., in Simsbury, Conn., and vice chairman of ACME, an association of management-consulting firms.**

Situation: **The client staffs the project team with inexperienced people, hoping the consultant will train them on the job.**

Danger: **Schedules are likely to slip and costs increase. Consultants usually commit to time schedules assuming participation of some skilled people from the client organization. "Reengineering, in particular, means using the creative process to find better ways of doing things," Nolan says. "If the client's team isn't of the highest caliber, this is extremely difficult."**

Situation: **An executive hires a consultant to justify something unpopular the executive has already decided to do.**

ment of the problem to be addressed—before setting out to find a consultant.

"The clearer the definition of the problem and the expected results, the better off both parties are going in," says Raymond T. Hall, vice president at Booz-Allen & Hamilton Inc. in New York. David Lord, editor of *Consultants News*, a newsletter published in Fitzwilliam, N.H., agrees, adding that clients sometimes hire a consultant to help them define their needs. "Often, clients are rather fuzzy on what whey really need, and in some cases a consultant can help the client get clear on that," he says.

But it doesn't always work out that way. When the head of IS for the criminal-justice agency of a large American city—we'll call her Eileen Thatcher—wanted a new case-tracking system, she hired a consultant to help define the requirements. "We wanted them to give us some ideas," she says. The requirements-definition project dragged on for nearly eight months before Thatcher decided that "they were really only expensive scribes—and they didn't even do a good job as scribes." Users said they had been misquoted, and the consultant brought not a single new idea to the table, says Thatcher. After three "rather confrontational" meetings that resulted in three draft conceptual designs that were "totally unacceptable—so

> **"BESIDES THE TWO-INCH PROPOSAL VOLUMES THAT you get from the vendors, the most important thing is the face-to-face meeting with the individuals, to discuss relevant experiences they have had. I want to know that they really bring to the table the experience required."**
>
> **– Ed Nazzaro**

Danger: **The organization is deprived of the consultant's dispassionate viewpoint. "A good many consultants won't take that assignment," says Raymond T. Hall, vice president of Booz-Allen & Hamilton Inc. in New York. "They expect to go in and give their best objective judgment, and that may contradict what the buyer wants."**

Situation: **One side wants a change in the project definition, and a battle ensues over whether that changes the scope of the entire project.**

Danger: **It's a clear sign that trust and communication are missing. "You'd better use that incident to establish an understanding of how such things will be handled in the future," warns Dale Wartluft, national director for systems planning and delivery at Ernst & Young in Chicago. "If you don't, the problem will occur again and again."**

Situation: **The client sponsor orders the consultant to stay away from the users.**

Danger: **The system that results won't be anything like what the users want. Says Wartluft, "There's no way I can get the job done if I can't talk to the users."**

CLIENT ALERTS

Situation: **Consultants are pushing a particular product without considering alternatives.**

Danger: **They have their own interests, not the client's, at heart. "Every client should be careful to get clear on what the consultant's marketing relationships are, where the commissions are coming from," says David Lord, editor of *Consultants News*, a newsletter published in Fitzwilliam, N.H.**

Situation: **Scope and deliverables are not clearly defined.**

Danger: **The consultants will expend more energy protecting themselves than getting the job done. "You'll start to see an effort on the part of the consultant to take control of the project, and a lot of money will be spent on just framing the question instead of answering it," says Jim Pollard, director of information services at Florida Power Corp., in St. Petersburg, Fla.**

Situation: **No one with the authority to command resources is pushing the project within the company.**

Danger: **The project will eat time and money but won't go anywhere. "Without a committed sponsor, the consultants can find all kinds of interesting things to do, but nobody will pick it up, look at the results or get the recommendations sustained," says Mitch Chaney, director of information systems at SKF USA Inc., in King of Prussia, Pa.**

–M. Williamson

CONSULTING SERVICES

Type Casting

Asking consultants to work in unaccustomed ways is risky, they and their clients agree. Wise consumers of consulting services will define their organizations' needs and then evaluate service providers with the following categories in mind, according to Albert F. Case Jr., a vice president at the Gartner Group in Stamford, Conn.

- Retainer consultants, for a fixed fee, are available to answer questions and give advice, and they often provide custom-designed, written information—such as technology forecasts and market research—on a regular schedule.
- Execution consultants come in, perform some task and go away until you call them again. Essentially, they fill staffing gaps in the client's organization. Their assignments can range from the mundane—contract programming, for example—to highly complex business-process reengineering projects.
- Enablement consultants may sell a software tool or application package, but they also teach the people involved how to use them. Or they may teach an organization to do something on its own, such as apply productivity metrics or reengineer a business process.

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bad we couldn't even rewrite them"—Thatcher terminated the contract, refusing to pay for those parts of the document that were useless. "I'd never hire a vendor again to help us do a requirements study," Thatcher says with some vehemence. "You're much better off doing it yourself. If you want to hire a secretary to take notes, and maybe somebody to conduct sessions with the users if you don't feel qualified to do it, that might be worthwhile."

Hall, however, sees one advantage to having a consultant do the preliminary system definition. "Sometimes it's an issue of being unsure what the issues are and where the levers are," he says. "In that case, you might [hire a consultant for a] diagnostic phase that can tell you a lot about whether you can work with that particular consultant." Hall raises one of the more hotly debated issues among consultants and their clients alike: Should the consultant who designs the application system be invited, or even allowed, to bid on building it? "You have to be willing to step up to the plate of implementation to give your recommendations true validity," Hall argues. "You want a consultant to be someone who could take the next step."

But designing and bidding on the same project can represent "a clear conflict of interest," according to Albert F. Case Jr., vice president with the Gartner Group's Applications Development and Management Strategies service, in Stamford, Conn. "If you have a consultant come in, do a study and then bid on the development of information systems, there's no incentive to provide a specification that's consistent [with what the IS organization can do]." Rather, the consultancy is likely to recommend a system that it can provide faster and at lower cost than internal IS.

Even where such ethical questions are moot, finding the right consultant requires a delicate touch. Typically, IS executives solicit suggestions both inside their organizations and among their peers, then invite as many as 10 consultancies to submit proposals. Those that are interested will probably ask

"I'D NEVER HIRE a vendor again to help us do a requirements study."
-Eileen Thatcher

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> **"IF YOU THEN abandon the consultants and expect, because of their credentials and previous successes, that they're going to deliver what you want, you're mistaken."**
> **–Dennis Klinger**

for a meeting to learn more about the company and its needs before sending in a response, says Mitch Chaney, director of information systems at SKF USA Inc., a manufacturer of roller bearings in King of Prussia, Pa. Reference checks may trim the list still further, until two or three contenders remain. Then it's time for the interview sessions.

Seated around the table at these crucial meetings should be representatives of the information systems and user communities, as well as "the key players who will be involved" from the consulting organization, says Ed Nazzaro, director of systems development for North Haven-based Blue Cross & Blue Shield of Connecticut Inc. "I don't want the marketing people. I want to meet the three or four key management folks who will participate in the project. Besides the two-inch proposal volumes that you get from the vendors, the most important thing is the face-to-face meeting with the individuals, to discuss relevant experiences they have had. I want to know they are not giving me the textbook line but that they really bring to the table the experience required."

Savvy customers understand that the reference accounts supplied by prospective consultants will be those happiest with the service they have received. The interview meeting provides an opportunity to dig deeper. Lord suggests approaching the subject by saying, " 'We understand that nobody's perfect and that not all of your assignments have been successful. Tell me about an unsuccessful assignment that you've had, along with an explanation of why it went wrong.' " Ask for the name of a person at the organization the consultant mentions, and make that telephone call. "It can provoke some interesting responses and get [beyond] the list of people who will say only nice things."

"We probe as best we can down all of the avenues," says Klinger, ticking off a list of questions he asks at consultant interviews. "How do you work with people? How do you gather information? How will you approach this project? What might an interim product look like? How will you measure success?"

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Having found a consultant you feel comfortable working with, the next step is to reach an agreement on how both sides will know when the job is done. Specificity is the key here, according to Case.

He tells how the New Jersey Department of Motor Vehicles commissioned the building of a system but forgot to mention one important expectation: that the system would support all of its users simultaneously. "They specified what the system should do, but not how it should perform," says Case. "They spent a couple of million dollars building the system, only to find that when they put all 400 people registering vehicles on [at the same time], it crashed. Who's responsible there? If I didn't tell you how many people and how much response time, then I can't hold you accountable."

Some executives think their job is done once the specifications have been agreed on and the consultants are on-site and at work. They're wrong. Says Klinger, "If you then abandon the consultants and expect, because

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of their credentials and previous successes, that they're going to deliver what you want, you're mistaken." Now is the time to think about relationships between the consultant and a variety of people in the organization: information sources within the user community, client members of the development team and—perhaps most important if the project will lead to significant change in the organization—key individuals in the executive suite.

"IF SOMETHING GOES WRONG, I'LL BE TAKEN OUT IN the square and executed summarily. On the other side, there's been a lot of publicity throughout the industry. If something goes south on this, the consultant will have been injured, too."
–Jim Pollard

"Establishing the relationship between your consultant and the top decision-makers and sponsors of change is terribly important," Cooper says. "If the top of the pyramid doesn't think much of the consultant, then you're barking up the wrong tree. Nine times out of 10, if you don't have the full sponsorship of the CEO, you're in trouble."

The goal in managing the consulting relationship, in Wartluft's view, should be "creating an open, candid communications environment in which both parties can totally level with each other. You need to be able to talk about the good, the bad and the ugly, with no one on either side feeling threatened."

That kind of openness and trust is especially important when the project scope must be changed, and that can happen no matter how much effort went into defining the project at the outset, says Blue Cross & Blue Shield's Nazzaro. "With the right amount of trust, if we make a major change in direction or scope, the vendor knows we aren't going to hold them to a fixed bid." Tending the relationship can pay off in other ways, he adds. "In some cases, the vendor has put on extra people, worked extra time and cut into its margin to help us deliver a project on time."

Clients aren't the only ones who change the scope of the project, as the pseudony-

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mous Earl Barr discovered, to his chagrin. Ryder System's Klinger points out that consultants "may not consciously pad their parts, but they're not looking to minimize the engagement, either. Scope has to be managed very closely, especially if you're going to turn the consultant loose among the users. They want everything, so the consultants may think they're doing the right thing in trying to satisfy them, and pretty soon the project gets too big. A good consultant knows how to control 'scope creep' and will work with you on it."

Structuring the consulting relationship so that there is risk on both sides isn't a bad idea, according to Jim Pollard, director of information services at Florida Power Corp., in St. Petersburg, Fla. Pollard is currently overseeing a $50 million project that will result in a new customer information system (see "A Democratic Reform Movement," *CIO*, May 15, 1993). Of that sum, some $20 million will go to Andersen Consulting, if all goes well. "If something goes wrong, we both stand to lose," Pollard says. "Obviously, I'll be taken out in the square and executed summarily if it isn't successful. On the other side, there's been a lot of publicity throughout the industry. If something goes south on this, they'll have been injured, too."

Pollard, who reports that the three-year project is slightly ahead of schedule, offers his recipe for getting the most out of any consulting relationship: "Adequately frame the issue, being sure that you and the consultant share the same understanding; involve the right people from your organization; if it's a project of any magnitude, set the deal up so that both can win and both can lose; and, then, grow the relationship so that if the project dictates changes, you can both alter the agreement to get to a better answer. When you develop that kind of working relationship," Pollard says, "then I think you've reached the pinnacle."

Mickey Williamson is a technical journalist based in Warwick, Mass., who specializes in emerging technologies. She heads the Qwerty Group.

"NINE TIMES OUT of 10, if you don't have the full sponsorship of the CEO, you're in trouble."

-Jerry Cooper

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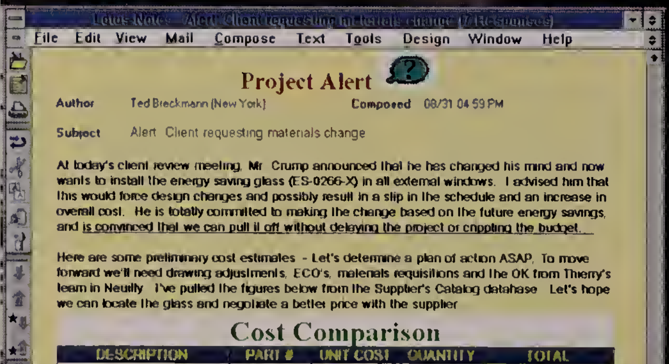

Lotus Notes - Alert: Client requesting materials change (7 Responses)
File Edit View Mail Compose Text Tools Design Window Help

Project Alert

Author Ted Breckmann (New York) **Composed** 08/31 04:59 PM

Subject Alert: Client requesting materials change

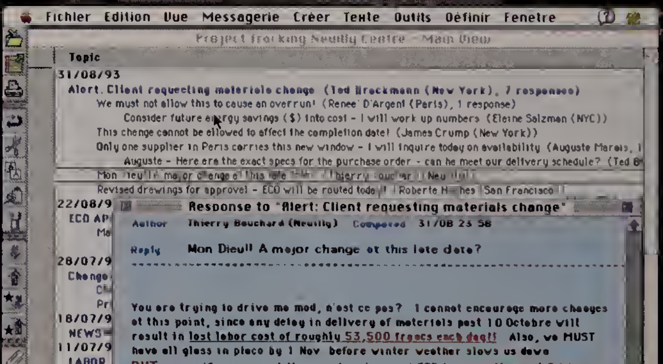
At today's client review meeting, Mr. Crump announced that he has changed his mind and now wants to install the energy saving glass (ES-0266-X) in all external windows. I advised him that this would force design changes and possibly result in a slip in the schedule and an increase in overall cost. He is totally committed to making the change based on the future energy savings, and is convinced that we can pull it off without delaying the project or crippling the budget.

Here are some preliminary cost estimates - Let's determine a plan of action ASAP. To move forward we'll need drawing adjustments, ECO's, materials requisitions and the OK from Thierry's team in Neuilly. I've pulled the figures below from the Supplier's Catalog database. Let's hope we can locate the glass and negotiate a better price with the supplier.

Cost Comparison

DESCRIPTION	PART #	UNIT COST	QUANTITY	TOTAL
Standard Glass	PW-00645	$623.00	644	$401,212.00
Energy Saver	ES-0266-X	$692.80	644	$446,163.20
Cost of Change				$44,951.20

Following a client meeting, Ted, the Account Manager in NY, enters a Project Alert in the Project Tracking Database, describing some last-minute client changes. All key individuals on the project are automatically notified. He includes a spreadsheet comparing prices from the Notes Supplier Catalog database.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Project Tracking Neuilly Centre - Main View
Topic

31/08/93
Alert: Client requesting materials change (Ted Breckmann (New York), 7 responses)
We must not allow this to cause an overrun! (Renee' D'Argent (Paris), 1 response)
Consider future energy savings ($) into cost - I will work up numbers (Elaine Salzman (NYC))
This change cannot be allowed to affect the completion date! (James Crump (New York))
Only one supplier in Paris carries this new window - I will inquire today on availability (Auguste Marais,
Auguste - Here are the exact specs for the purchase order - can he meet our delivery schedule? (Ted B
Mon Dieu!! A major change at this late date? (Thierry Bouchard (Neuilly))
Revised drawings for approval - ECO will be routed today! (Roberta Hughes (San Francisco))
22/08/9
ECO AP
28/07/9
Change
18/07/9
NEWS
11/07/9
LABOR
30/06/9
ARCHIT
29/05/9
ECO -

Response to "Alert: Client requesting materials change"

Author Thierry Bouchard (Neuilly) **Composed** 31/08 23:58

Reply Mon Dieu!! A major change at this late date?

You are trying to drive me mad, n'est ce pas? I cannot encourage more changes at this point, since any delay in delivery of materials past 10 Octobre will result in lost labor cost of roughly 53,500 francs each day!! Also, we MUST have all glass in place by 1 Nov before winter weather slows us down.
BUT If you can get the new drawings and ECO to me in the next 24 hours with an acceptable delivery date, then I think I will be able to work it into the current construction schedule and plan labor accordingly. I'll be on the lookout for the ECO and the drawings tomorrow, otherwise I'm afraid we must tell our client that it cannot be done. - Thierry

Thierry, the construction site manager in Neuilly, is paged via Notes, and sees the Alert (as well as responses from other team members) from his Powerbook™ at the site. He responds that changes are possible only if the ECO and proper procedures are completed within 24 hours.

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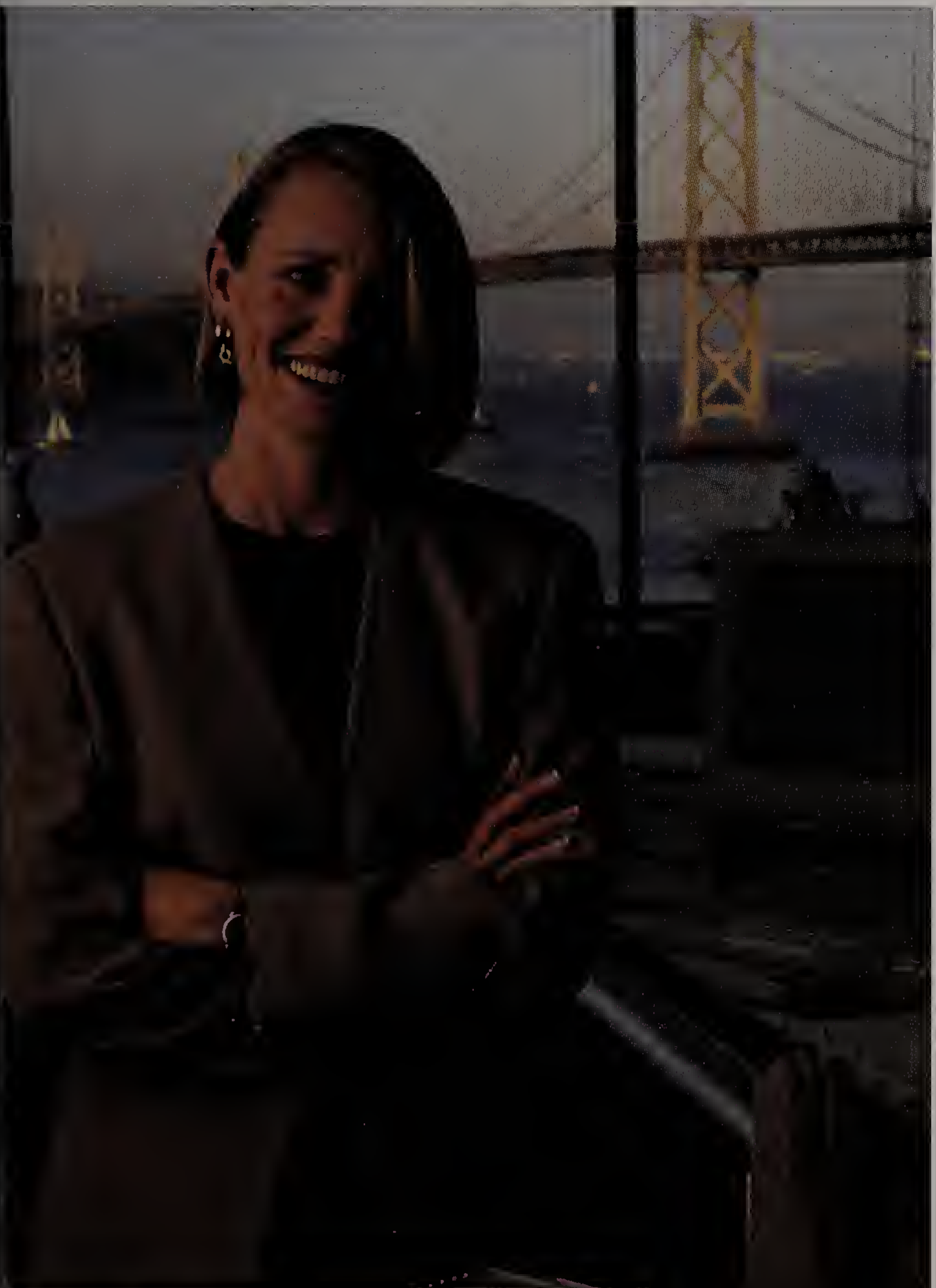

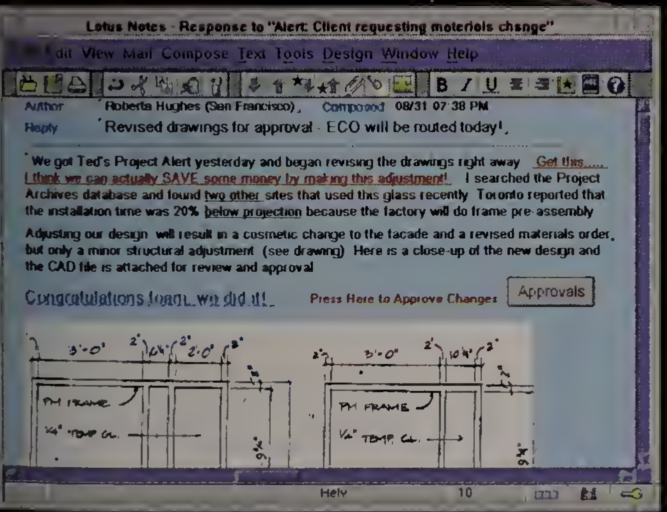

Lotus Notes - Response to "Alert: Client requesting moteriols change"

dit View Mail Compose Text Tools Design Window Help

Author: Roberta Hughes (San Francisco), Composed 08/31 07:38 PM

Reply: Revised drawings for approval - ECO will be routed today!

We got Ted's Project Alert yesterday and began revising the drawings right away. Get this.... I think we can actually SAVE some money by making this adjustment! I searched the Project Archives database and found two other sites that used this glass recently. Toronto reported that the installation time was 20% below projection because the factory will do frame pre-assembly.

Adjusting our design will result in a cosmetic change to the facade and a revised materials order, but only a minor structural adjustment (see drawing). Here is a close-up of the new design and the CAD file is attached for review and approval.

Congratulations team, we did it!

Roberta, the architect in San Francisco, gets to work on the drawings. But first, she checks the Project Archives database and reads about a similar job in Toronto where money was actually saved even though material costs increased. She sends the revised drawings, including the details on the Toronto job, for the team's approval.

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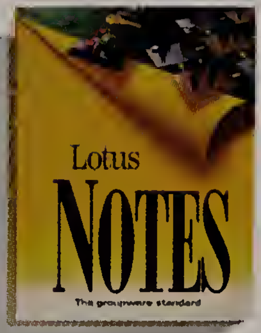

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CONSULTING SERVICES

PROFILES

WORKING RELATIONSHIPS

Companies that have managed successful consulting engagements, such as the three presented here, know that it takes planning, involvement and trust to make a project fly

BY MICKEY WILLIAMSON

Showtime Networks

Successful consulting projects depend on mutual trust between client and consultant and on the continued involvement of company leaders. For Showtime Networks' Jerry Cooper, the relationship is a true partnership.

IT TAKES A SERIOUS problem to get Jerry Cooper out hunting for a consultant.

"Sometimes it's hard, from an ego point of view, to admit that we have a problem we can't solve by ourselves," says the senior vice president and CFO at Showtime Networks Inc., in New York. "We have to be suffering a lot of pain before we do that." But the pain was sufficiently serious in late 1991, when Cooper started looking for consulting firms that knew something about billing and collection processes, preferably in the cable-television industry. He talked with colleagues both inside and outside his company.

"People know people, and you get pretty quickly to the several outside consulting firms that have the expertise you're looking for," he says. Unlike many of his peers, Cooper did not draw up a request for proposals and wait to see who would respond. "Basically, the RFP was in my head," he says. "Writing it up and sending it out is probably a better way to do it, from an objective point of view, but I didn't do it that way."

Instead, he invited a half-dozen companies in for a chat, evaluating each on two criteria. "The objective one is whether the firm

JERRY COOPER: FOCUS AND DISCIPLINE ARE ESSENTIAL FOR SUCCESS.

PHOTO BY KENT HANSON

Jeff
Bridges
TERMINATO
JUDGMENT
SHOWTI
M
ISE
JACK
NICHOLS
A FEW GOO

has experience in the particular problem and can point to clients that we can talk to. The subjective one is a gut feel as to how comfortable you are with the people you're talking to and with their ability to do the job. I personally think that the rapport between you and the people you're going to be working with is as important as their technical abilities."

"I PERSONALLY THINK THAT THE RAPPORT BETWEEN you and the people you're going to be working with is as important as their technical abilities."
-Jerry Cooper

Cooper narrowed the list to two consultancies, then introduced them to his boss, CEO Tony Cox, "to see if he felt this would work for us." He also called in "some of my subordinates who would be working closely with the consultants, to see whether or not they had the same feeling I did about them," he recalls.

MITCH CHANEY: "PEOPLE DON'T WANT TO WAIT FOREVER TO SEE RESULTS."

PHOTO BY EUGENE MOPSIK

Cooper knew he was facing a business-process reengineering project, and the firm he chose, CSC Index Inc. of Cambridge, Mass., "had the best expertise in trying to do something which nobody had really done anyway," he says. More important, he felt he "had a good rapport" with Roger Pratesi, the CSC Index vice president who would be in charge of the project.

Pratesi helped Cooper define the project from the outset. When Cooper asked him to provide a proposal, Pratesi says, "the idea was to ease the burden of automating some of the business processes around billing and collection. It soon became obvious that the real problem extended well beyond the boundaries of the finance organization. It included contracting, selling and things of this nature."

"Basically," says Cooper, "what we did was turn a financial organization into a customer-service organization. We flattened out a hierarchical, task-oriented group into teams that work closely with our customers rather than having specific tasks." Work began in January 1992, and the new organization was in place almost exactly a year later. "It was a very difficult thing to do, considering our corporate culture and people's fears of the way their jobs would change," Cooper notes. "It took a lot of work in terms of training, developing new values and beliefs," and helping people adjust not only to new responsibilities but also to "a totally different physical work space."

Nearly everyone involved in the project at one point or another came up with an idea for something to add to it. Cooper stuck to his guns. "I just said, 'No, let's get done what we envisioned. Then we'll go on to other things.' That discipline is very necessary." The CSC Index team stayed around for a couple of months after the launch of the system "to keep everybody focused and to reinforce everything we had learned," Cooper says. Periodically, he calls the consultants back in "just to reinforce things. It's like maintenance on a car."

Pratesi can tick off a list of factors that made the project a success. "First, we had a clear understanding of what we were to accomplish, who was to be involved and how we were to go about solving problems," he says. He and Cooper worked out in advance "how we would work through periods where specific answers might not be known. There has to be a willingness to work through those difficult periods together—a real partnership." Pratesi calls Cooper's leadership crucial to the project's success. "[Cooper]

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understood where he wanted to go and communicated a clear vision," the consultant says.

Cooper's leadership never wavered. "Jerry spent about half of his own time understanding what was going to be done and how it was going to be done, communicating and coordinating across the organization," Pratesi says. "He was an active player.

"A lot of leaders think that once they initiate a project, they can hand it off to the consultants, but that's not the case. When you're talking about a project that causes big changes in the corporation, you have to have the continued involvement of the leadership to be successful."

SKF USA

SKF USA hired Nolan, Norton to evaluate IS and develop a tool to reckon costs, judge performance and help steer investment. The chemistry between the consultants and company executives was as much a factor in their selection as their expertise.

WHEN MITCH CHANEY took over in 1989 as director of information systems for SKF USA Inc., a roller-bearing manufacturer in King of Prussia, Pa., he "needed an evaluation done to get the lay of the land—how things were set up, what was good and what was not good," he says. Wanting an objective view, he wrote an RFP and assembled a steering committee from among the CEO's direct reports to help him select a consultant. As part of the engagement, he expected the consultants to leave behind "some practical tools, techniques and measurements" that he could use to monitor the IS department's performance, says Chaney.

Because he was new to the organization, he left the final selection decision to the steering committee. They chose Nolan, Norton & Co., of Boston, partly because of its breadth of experience with manufacturing companies but largely because of the "chemistry" between the consultants and the steering-committee members who interviewed them.

Chaney knew the project's success would depend on the willingness of SKF employees to answer the consultants' questions, both in face-to-face interviews and by filling out questionnaires. He made it his job to "build partnerships and get people interested" in participating. Periodically, he set up meetings during which the Nolan, Norton partner in charge presented interim findings in terms of how SKF stacked up against its competitors and other manufacturing companies of equivalent size.

After six months, the consultants departed, leaving behind an assessment tool to help Chaney evaluate the IS organization. "You look at your total IS budget and categorize all costs into one of three elements: software development, software maintenance and operations," Chaney explains. "Then you look at the ratio of each category to the entire budget." Nolan, Norton helps him compare the results to industry norms.

Adherence to norms does not imply rigidity, though. Deviation is acceptable if Chaney can see that a higher investment in one category will yield a measurable gain. "If you're going to invest in developing a new system, for example, you do it based on the return you're going to get by decreasing inventory, or increasing sales volume or gaining productivity. If the ratios go out of whack, you'll understand why."

Chaney cites three factors in the project's success. He involved the right people from the functional side of the business, "people who have a broad perspective of how their function contributes to the overall process," he explains. Also, he kept the project moving because "time was critical in getting this thing done. People don't want to wait forever to see results." And, finally, the consultants helped him build an evaluation plan, which they presented to members of the business community as a prototype. "We walked in and said, 'Here's an example [of what we plan to do]. How would you change it?' "

CHANEY CITES THREE FACTORS IN THE PROJECT'S success. He involved the right people from the functional side of the business, kept the project moving and, with the help of the consultants, built an evaluation plan.

Three years later, the results of the consulting project are still in use. Chaney checks his ratios quarterly and adjusts his plans according to what he finds. Annually, at budget time, he publishes his results and shows how they tie into corporate goals. His findings also help him "make the hard decisions" on development-project priorities.

Blue Cross & Blue Shield of Connecticut

It's the CIO's job to stay involved in the project and make sure it has upper-level support. That requires educating top management and gaining their buy-in for the project's overall goals.

WHEN THE IS ORGANIZATION led Blue Cross & Blue Shield of Connecticut Inc. into a mammoth business-systems conversion project in 1990, "one of the main premises was that we weren't going to turn accountability over to our consultants," says Ed Nazzaro, director of systems development. "This was our project, and we were looking for expertise to help us."

The senior IS staff—three directors and now-retired Senior Vice President and CIO Joseph Barry—at the North Haven, Conn.-based health insurer sought experience in insurance, managed health care, technology forecasting and systems integration. The group trimmed a list of a dozen consulting groups down to four, brought them in for "an initial screening" and then had detailed discussions with two before selecting Andersen Consulting. The selection process had one rough spot, however. "They were able to do everything we wanted on paper, but there was an issue with how the people involved were going to mix," Nazzaro remembers.

"The original proposal team from Andersen had some people we weren't comfortable with—not that they weren't capable people, but there was a little chemistry problem. Andersen was quick to pick up on that and make some changes."

Nazzaro knew that the kind of large-scale change his department contemplated would require a major communications effort. "There's a certain amount of salesmanship that has to take place," he says. "A project of that magnitude was going to involve communications with the chairman, his direct reports and all the way down to the middle-management ranks of the company."

Nazzaro arranged for space in which to locate the joint IS-consultant project team. Then, he says, "I literally moved down with the project team and sat next to the senior manager. So we worked hand in hand in the truest sense."

High on Nazzaro's agenda was a plan to get top management on board. Two months into the project, the team began a series of presentations, setting out a project overview and successfully soliciting tentative approval without getting into the details. Nazzaro notes that the chairman was skeptical at the two-month point, "even though he understood the need." But monthly review meetings with the chairman and his staff, attended by IS management and the Andersen Consulting partner in charge, "brought his comfort level up incredibly."

At the six-month mark, acceptance of the full five-year plan was "almost a formality," Nazzaro says. "We knew by the fourth or fifth month, based on the constant communication and feedback, that the project was going very well. We were meeting the targets we had set up, to the satisfaction of the chairman and the management committee."

The extensive groundwork appears to have paid off. Now nearly three-fifths of the way through, the project has never required a major revision, despite uncertainties arising from talk of national health care.

ED NAZZARO: "THERE'S A CERTAIN AMOUNT OF SALESMANSHIP THAT HAS TO TAKE PLACE."

PHOTO BY KENT HANSON

1991

DATAPRO SURVEY–BEST OVERALL

1992

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1993

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CONSULTING SERVICES

MAKING THE NUMBERS

The Gartner Group doesn't leave its performance up to chance

BY MICKEY WILLIAMSON AND LEW MCCREARY

Lord Kelvin, the 19th-century British scientist who devised a common unit for measuring temperature, had predictable scorn for unquantifiable information: "[W]hen you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind," he wrote.

We may not all be Lord Kelvins, but ours is a certifiably measurement-happy era of corporate life. Most every investment decision is likely to be justified 12 ways to Sunday, and once the investment is made, the results will be bird-dogged avidly. In short, the pressure to say it in numbers is strong.

Consulting firms are no different from any other business. The Gartner Group, a Stamford, Conn.-based research and consulting firm, seems particularly Kelvinistic in its use of numbers. Gartner, whose good reputation rests to a great extent upon its forecasts about how and where technology will trend over time, assigns to each of its forecasts a number reflecting institutional confidence in the likelihood the forecast will come to pass.

"Point-nine basically means it would take an act of God for [a predicted event] not to happen," says Michael Braude, senior vice president and chief research officer at Gartner. "Point-six means we're pretty sure it will happen, but we won't be shocked if it doesn't."

Behind such numbers lies the recognition that subscribers to Gartner's various research, analysis and consulting services make strategic technology decisions at least partly based upon these forecasts. The probability estimates offer a jot of extra insight into just how stiff the Gartner backbone is around particular forecasts.

"Quantum mechanics teaches us that the universe is unpredictable," says Braude. "A research conclusion is one of a set of possible outcomes, and we need to convey to the customer how probable we think that is."

The quantification (and qualification) of its foresight is only one piece of Gartner's contextual offerings. Every research conclusion is the outcome of a process, and Gartner lets customers know what went into reaching a given conclusion—including evidence that could weigh against it. "We're really not in business to tell the customers what to do," says Braude. "What we say is, 'Here are the issues involved in figuring out what to do. Here's how the world is going to be five years from now. And here are the issues you [need to] work through so you can figure it out yourself.' "

Braude recently completed an audit of Gartner forecasts that, he says, shows them to be 88 percent accurate, regardless of the assigned probability, meaning that many lower-probability pronouncements actually came true with greater-than-anticipated frequency. The lesson Braude draws from this audit is that Gartner may have been too cautious in assigning probabilities. "I don't congratulate myself on that," he says.

Just as analysts' conclusions get stress-tested to see how well they hold up, the analysts themselves are subjected to a variety of metrics. Some weigh the workloads analysts shoulder; others assess the quality and value of their output—both to the customers and to the Gartner Group bottom line.

For most of Gartner's product lines, revenue per analyst is tracked in ratio to every $1,000 of salary, resulting in an ROI figure for each analyst. Braude declines to reveal the exact amount of the annual target for analyst revenue, except to say that it falls between $500,000 and $1 million.

Gartner has set up a mechanism by which it can benchmark its more-than 150 analysts. This involves an index of 20 key activities (writing research notes, taking telephone calls, conducting customer briefings), with points assigned to each activity based on the amount of time it takes.

But there's more to pulling your weight than putting in the hours. Braude, along with some colleagues, developed a way of judging "which pieces of research add the most value to the customer"—including saving a customer money, "providing a brilliant 'aha!' type of insight" that makes something suddenly clear, or teaching a process (such as negotiating a contract with IBM or building a distributed relational database). Braude makes a regular qualitative study of analyst output, compiling a monthly top-20 list and publishing descriptions of the honored work and its authors for all the analysts to see. The work itself is kept in a notebook for people to peruse, and a small financial reward accompanies this recognition.

Gartner also provides a couple of weekly crucibles in which ideas can be either tempered to a durable strength or else incinerated out of existence. Braude usually chairs a regular Friday afternoon research meeting at which a handful of analysts present fresh research findings or conclusions.

"Peer review is an essential part of our process," he says. It helps to sharpen research "so that an analyst doesn't go off on some fishing expedition and tell a customer something silly." Braude tries to keep the atmosphere from becoming too personal. Although an observer might see the meeting as being very civil and very professional, still, says Braude, "there's blood on the floor.... People don't call each other fools and say, 'Why don't you leave the company?' " That sort of ad hominem attack used to go on, says Braude. And even now, with a higher degree of restraint and civility in their language, there's no mistaking analysts' intolerance of a deficient conclusion.

Braude also runs a program for the six to 10 college graduates that Gartner recruits each year and trains to be researchers. They hold their own research meeting on Wednesdays, which anyone else from the company can attend (two or three sometimes do). These research associates make their presentations, says Braude, and "I pretty much dismantle them. I let them have it all, right then and there on the spot.

"If in the [Friday] meeting someone really screws up and no one else catches them, I will speak to them after the meeting in private. But in this meeting we do it publicly, so everyone can learn—because we have to ramp up very fast." According to Braude, Gartner President and CEO Manny Fernandez attended one such meeting and called it "gruesome."

Indeed, says Braude, "some of those kids cry after the meeting. But that's one of the ways that they grow. You learn the fastest when the stimulus is the greatest. No pain, no gain." CIO

ILLUSTRATION BY KEVIN HAWKES

GARTNER JUDGES which pieces of research add the most value to the customer—including saving a customer money, providing a brilliant "aha!" type of insight that makes something suddenly clear, or teaching a process (such as negotiating a contract with IBM or building a distributed relational database).

A DECIDED SLANT

The IS manager at GE Appliances is unshakable in his belief that business talents, not technology skills, will keep his staff from fading into irrelevance. A panel of experts comments on this unconventional training approach.

BY RICHARD PASTORE

The information systems group was once rewarded for behaving much like a dog fetching a stick. It would tweak an existing system, receive a pat from the users, and then run and do it over and over again. "That isn't the game anymore—now it's the transformation of the corporation," says Geoffrey E. Relph, manager of information management at GE Appliances. To participate—or better yet lead—in that transformation, IS professionals need a new skill set and competency model. Otherwise, "IS could become irrelevant," Relph warns.

Intense competition and a mandate to improve total-cost productivity by 6 percent annually has pushed GE Appliances to reinvent business processes companywide. In support, Relph's new competency model stresses understanding customer needs, analyzing business processes and focusing on deliverables. It also requires the leadership skills of project management, facilitation, communication, presentation and negotiation, as well as the establishment of global vision and a broad business perspective.

Notice the emphasis on business, not technical talents. "I am not focusing on programming," Relph says. "The main thing I'm trying to do is broaden [the IS staff's] business understanding." Toward this end, he rotates staff's and development teams' assignments among user departments, co-locates some IS personnel with users and places people on general-business task forces such as audit teams and problem-solving groups. As the company pushes into global markets, Relph has begun sending staff abroad to gain multicultural experience. "We need to expose our people to more than Louisville and Boise," he says.

While Relph views business reskilling as a continuous effort, technical retraining occurs more on an as-needed basis. The introduction of Unix-based client/server computing has necessitated intensive retraining, for which he has relied on internal education and

SUBJECT

GE Appliances (a division of GE), Louisville, Ky.
Industry: Appliances
Revenue: $5.3 billion
Total employees: 18,500
IS staff size: 200 (full-time and consultants)
Total users supported: 12,000
IS executive: Geoffrey E. Relph, manager of information management

OBJECTIVES

- **Position IS as a leader in corporate transformation**
- **Evolve IS from a technical specialist into a business-technology hybrid**
- **Continue ongoing program to reskill IS professionals in a broad range of business-oriented skills**
- **Retrain IS in new technology, such as client/server, as needed**

CONCERNS

- **What do others think of our emphasis on business-oriented reskilling?**
- **Are we too extreme in underemphasizing technical retraining?**
- **What reskilling strategies have succeeded or failed for others, and why?**
- **How do you decide when to reskill versus when to bring in new resources?**

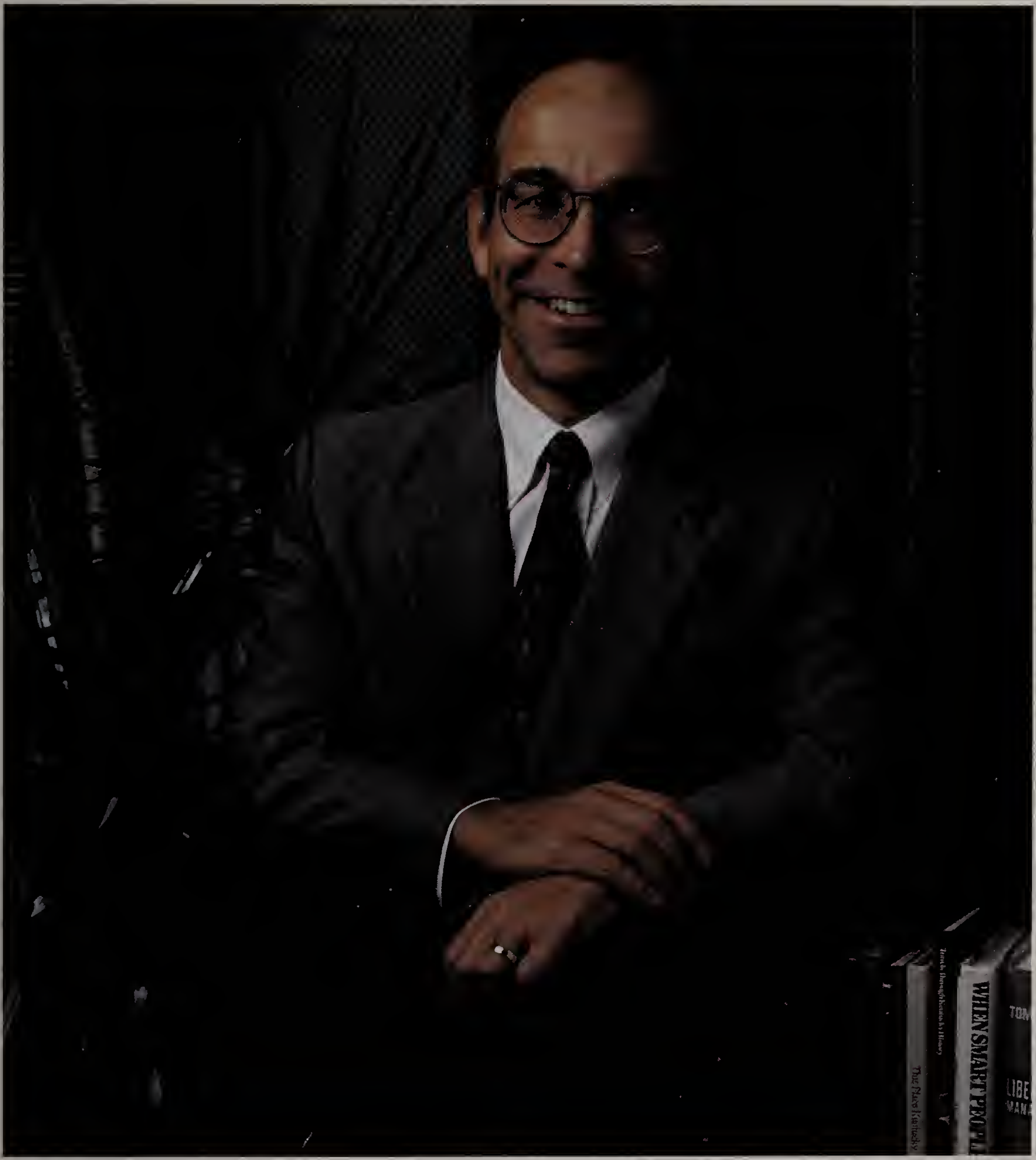
PHOTO BY DAVID FOX

GEOFFREY RELPH: *"The main thing is to broaden [the IS staff's] business understanding."*

GERALD LONG
Summit Information Systems Inc.

PATRICIA WALLINGTON
Xerox Corp.

CARLA PAONESSA
Andersen Consulting

L. PAUL OUELLETTE
Ouellette & Associates Consulting Inc.

help from various vendors. To free time for this (and save considerable dollars), his group has begun outsourcing systems maintenance to India. Even so, time and resources are tight; an urgent multimedia development project forced Relph to turn to outside developers.

■ **How do we gain acceptance for and cooperation with our methods from user departments and customers?**

Relph is dogmatic in his business-first reskilling philosophy; he even foresees a time five years out when his group will have far less technical expertise than those of his peers in other firms. But he's interested in how others view his approach and what different methods they've tried to break out of the stick-fetching routine.

(Editor's Note: Relph resigned his position at GE Appliances shortly before publication of this article. However, the reskilling philosophies and goals he espouses remain valid and integral to the company.)

Gerald Long, *president of Summit Information Systems Inc., a subsidiary of Roadway Express Inc. (owned by trucking and package-delivery firm Roadway Services Inc.), Akron, Ohio*

Mr. Relph, I strongly endorse your business-first reskilling philosophy. However, I would like to express some concerns and offer some views on implementation. We must be careful that the pendulum of training emphasis does not swing too far in the direction of business skills and away from technical requirements. Basically, information technology personnel are builders of tools that provide people in the business functions with the most-efficient means of accomplishing their objectives. Therefore, it is extremely important that they understand the business processes they support, but it is equally important that they have the expertise to apply technology effectively.

Your case study states that you foresee a time five years out when your IS group will have less technical expertise than those of your peers. If these peers you refer to are within the appliance industry, you may be putting your company at risk of losing the competitive advantage that technology offers. [For my own company,] I feel much more comfortable with a vision of an organization that has the most-advanced technical skill set possible and a more-thorough understanding of business processes and competitive conditions than either my internal or external peers.

When it comes to implementing your reskilling strategy, you may want to evaluate one of the approaches we are using at Roadway Express. It is called the Training and Development Planning System, and it was formulated by an internal quality team. The team started by focusing on business objectives and individual skill-set requirements. They then determined that each IS employee should be held accountable for developing and executing a plan that meets his or her customers' needs and wins management approval.

In effect, this makes IS employees the managers of their own personal reskilling and development projects. They must develop and present their training requirements and then negotiate with management and their customers to ensure that time for this training is allocated in project schedules. Since employee development is now a deliverable in the same sense as other systems deliverables, you will be able to measure how well your organization is doing with its most-important asset.

To make this approach work, an extensive but not necessarily expensive support structure must be put in place. You seem to have a good start with your new competency model focusing on customer needs and deliverables. I suggest that you build a support structure by soliciting additional internal- and external-customer input, specifically concerning what skills customers think would benefit your staff and how the customers might help provide the training or aid in developing these skills. This may speed up the reskilling effort and broaden the opportunities more than your current co-location and task-team assignment efforts.

One benefit of this approach is that it unleashes the creativity of all of your staff and your participating customers. For example, we have received detailed recommendations from customers on presentation techniques that have minimized expenses. IS staff research technical and business journals to find training

GERALD LONG: *"We must be careful that the pendulum does not swing too far."*

PHOTO BY ROGER MASTROIANNI

aids, such as videotapes and computer-based programs. The aids that appear to be most effective are those that are least complex and provide consistent delivery to a wide audience.

You might also try, as we do, to maintain a current-skills inventory database. This will allow you to identify both business- and technical-training requirements that match your strategic business objectives.

Though "reskilling" has become a buzzword, I think we should regard it as an evolutionary process that makes us better service providers. The better our technical people understand the business process, and the closer their skills match customer requirements, the more successful GE Appliances and Roadway will be in our marketplaces. As our customers see the improvement in our ability to meet or exceed their expectations, we will indeed assume leadership roles in the transformation of the corporation.

Patricia Wallington, *vice president and CIO, Xerox Corp., Stamford, Conn.*

We can always train people in new technical disciplines, but I agree with Mr. Relph that what we really need are leadership skills. Setting expectations, taking risks and broadening business responsibilities—these are the types of skills that let companies recruit CIOs from within the department, rather than from outside the firm or profession. For people to move up the ladder at Xerox, we require that they first gain multifaceted business experience from job rotation among business units. The goal is to blur the lines and bring together the technical and business universes with common languages and objectives.

While I applaud your business-reskilling dogmatism, Mr. Relph, I urge you to remember the 80-20 rule. Twenty percent of your information management crew will have technical expertise you'll want to continue to nurture. That way, GE Appliances won't lose the opportunity to identify, evaluate and implement emerging technologies.

Placing IS staff on business teams is a great reskilling technique, one we've been using as part of our quality program for 10 years. But we've learned that it only works if the IS employee has the mind-set that he or she will contribute not just as a technician but as a whole person.

One thing you didn't mention is how you will determine what skill sets will be needed in the coming years. We formed a task force to study how the role of IS will change in the future. It began by looking at future job families and their key skills; it then narrowed down the requirements to 14 critical talents. Some were technical, but a large number turned out to be business-focused, like managing risk.

We then left it up to individuals to assess their skills against the 14 and develop a plan to address any gaps. They did it with management's support and guidance, but we wanted them to take some control over their own destiny and learning.

Another reskilling technique you might explore is a cooperative arrangement with a local university. We formed an alliance with the Rochester Institute of Technology to bring a degree program on-site for our staff in Rochester, N.Y. We work with the university staff on the curriculum and give our employees four hours of work time a week to pursue graduate and undergraduate degrees in both business and technology.

Xerox's culture has made it relatively easy to win acceptance in placing IS people on multidisciplinary business teams. However, I understand your concern about gaining user cooperation. Remember, internal customers are increasingly aware of their dependence on you for their own success. When you come to them with a different approach, they will generally be supportive. When you ask them for help in broadening your technical people, try offering them something in return, like help in improving their technical skills. Then they'll think

Panelists' Findings

- **In dynamic organizations, reskilling is essential for IS survival and should establish IS as a leader in the company's business transformation.**
- **A business-first reskilling strategy is justified to swing the balance away from overemphasis on technology training.**
- **Caution should be taken not to lose core technical competence or jeopardize technical competitiveness.**
- **Pay particular attention to reskilling in the areas of leadership, communication, facilitation, consultation and service orientation.**
- **Implement reskilling by turning it into a project deliverable and making IS employees directly responsible.**
- **Form alliances with local universities to deliver business and technology retraining.**
- **Try to predict the skills necessary for the future role of IS and retrain accordingly.**
- **Turn to internal and external customers for guidance in business-oriented reskilling.**
- **Combat business-unit resistance to reskilling strategies by being very flexible and offering mutual benefit.**
- **Reskilling should take place only when there is a near-term opportunity to apply those skills; otherwise, they may be forgotten.**
- **Do not overlook the need to market the reskilling philosophy throughout the organization.**

about what benefits might flow back to the user community.

When considering whether to reskill or hire from the outside, I think a mix is best. Bringing in outsiders can provide a stimulus that helps you reexamine your assumptions. We've also found that hiring folks right out of college can be highly energizing to the organization.

Even after you've narrowed your business-skill gap, your reskilling efforts aren't over. If your people are going to have an extended career at GE Appliances, you have to be able to continually refresh and renew them. You must build learning into the job functions; it's important for employee self-esteem and motivation. Over the long-term, there are just two skills to worry about: learning to learn and learning to change.

Carla Paonessa, *managing partner of organization change in Andersen Consulting's Change Management Services practice, Chicago*

I agree with Mr. Relph that IS departments must become best-practices organizations that include reskilling in the company's business processes. The total IS team has a strong need to know where the company is going long-term rather than just focusing on individual applications. That's true not only for companies undergoing transformation like GE Appliances. Firms in transition turn a microscope on how poorly IS is educated about the business. But companies not in transformation are sitting on a time bomb [in danger of growing stagnant], so they too could benefit.

CARLA PAONESSA: *IS is still "keeper of the technology."*

PHOTO BY TIM SCHNEIDER

Mr. Relph, your emphasis on business over technical reskilling is probably justified to give IS an opportunity to catch up with other parts of the organization. Perhaps IS has focused too much on new technology, and that's shortsighted. Don't be concerned about underemphasizing technology retraining. Projects like transitioning to client/server are hard to do, and many CIOs look to outside help anyway.

You carry this a step further by predicting that your department will evolve in five years into one that is less technically sophisticated than your peers'. This concept is discussed quite frequently today. Technology is changing so fast that some CIOs have concluded they're not going to try to keep up. Their staffs will keep up with the business, and they will hire consultants whose job it is to keep up with technology. The staff will learn enough technology to work with consultants and communicate user needs but not enough to do the development themselves.

One caution I have is that you take care your group does not lose its core technical competence. You're still the keeper of technology. No matter how well-versed your staff members become in the business processes, they will probably never be better business analysts than the true business analysts.

Looking at your specific business-oriented skills, I'd say you've pinpointed some good ones, particularly facilitation and communication. These have been underemphasized in the past and are more critical now because of the increasing use of teams. Several of your own reskilling strategies involve working with teams, in fact.

Probably the biggest new development and reskilling trend you're following is relocating IS development teams to the business units. Literally taking IS and placing it in the user organization fosters communication with the user community and allows IS to experience how that unit is run.

However, as you've noticed, there can be resistance. The range of reactions to this practice is illustrated by one of my client companies. One business unit wants IS responsibility located within the unit. Another unit is hesitant to take in IS people and the accompanying cost allocation and overhead burden. And a third unit's executive said no way, he doesn't know how to supervise IS people.

One way to overcome resistance is to give your IS people to users for free for a while. You can put a time limit on the relocation so it doesn't seem like it's forever. If users don't like dealing with multiple team members, let the team leader be the single liaison to the unit.

Placing IS staff on business task forces is another good idea that will benefit all sides. IS personnel have a trained eye for the flow of information; most other employees don't. So it brings an added perspective to the team's work. For IS, of course, it's a great insight into the workings of the business.

While these strategies seem sensible, they may not always pay off in practical job skills. In fact, there's a risk that much of what's learned will be forgotten before it's applied. To prevent this, stagger and prioritize your reskilling. If you plan a new order-processing system, just send out the people involved in that project so they can get that exposure at the

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L. Paul Ouellette, *CEO of Ouellette & Associates Consulting Inc., Bedford, N.H.*

You, Mr. Relph, are a visionary, not an extremist. I commend your decision to reach for strategic, long-term goals for your information management organization as you seek to stake a claim in the corporate territory.

Your department is moving toward total business integration, which is exactly where IS should be going, but you wonder if your decision to improve your staff's human-interaction and business skills is on target. The answer is yes, you are 100 percent right. The reason you may feel some discomfort with your decision is that it's just not popular or well-understood. Don't worry about that. The following steps should help you stay the course you've set.

First, market the new philosophy to your staff. Your confidence in the reskilling effort and your ability to communicate both your enthusiasm and the plan effectively are crucial to its acceptance and success. Tell your entire staff, not just your direct reports: "This is where we are, this is where we need to be, and this is how we're going to get there." Reinforce your vision by making every individual aware of it and part of it.

Second, provide the right skills. I strongly recommend you adopt an overall management philosophy that concentrates on the following four-part skill set for IS professionals.

- A consultative approach to all daily business interactions
- A service orientation as the standard of excellence
- An effectiveness in communications that goes beyond the spoken word and reflects the ability to convey and receive nonverbal messages
- A marketing awareness in which all IS personnel understand the need to represent the department and market an image of its capabilities upon which clients can base their perceptions.

Third, make these skills available to everyone in IS. It sounds as if you and your staff are already using some of them, which is a great beginning. In our work with more than 1,000 IS organizations, however, we've found that every staff member should develop all four skills for maximum value to the department and company. Even if some jobs rely heavily on just one or two of the skills, everyone needs a practical, working knowledge of the entire set to completely retool the IS organization.

Fourth, retool for survival. Our research and hands-on experience have proven that this skill set is mandatory for IS survival in radically changed corporate environments like GE Appliances'. Reskilling your IS staff doesn't require them to jettison existing knowledge or technical expertise. Rather, retooling enhances their abilities and makes them more effective.

As GE Appliances reinvents its business processes companywide, you have a responsibility as the leader of some 200 employees to help them adjust. The only way to do that is to retool their skill base while not neglecting technical retraining where it is warranted.

Retooling will let you beat your five-year deadline for reaching the point where your staff may be making greater use of their human-interaction and business skills than their technical expertise. CIO

EDITOR'S NOTE

"Second Opinions" takes real-life issues facing real-life information executives and presents them to a panel of experts—IS practitioners, consultants, academicians and non-IS executives—for evaluation and advice. While our revolving panel of experts cannot explore all the possible solutions in this limited space, we hope that by suggesting a few strategies, they may contribute to a better understanding of serious, common concerns of IS executives and other business leaders. We also plan to check back with our subjects to see how they chose to address the issue and to report on their progress.

We invite our readers to offer topic suggestions and/or serve as case studies for future articles. Please contact Richard Pastore at 508 935-4435.

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Getting to Unix

Many IS executives are being called upon to move their companies' systems to an open environment. But selecting an open-systems vendor can be perilous.

BY RONALD V. ROSE

The word "crisis" in Chinese is composed of two characters: The first is the symbol of danger, the second the symbol of opportunity. Both apply to the fast-moving environment of open-systems migration projects.

One of the first problems is selecting an open-systems hardware vendor. Many CIOs have little background in Unix open systems. Making the wrong decision can have repercussions for years to come. Unfortunately, tight deadlines are all too often imposed on such decisions, leaving IS executives insufficient time to properly review all the pertinent variables.

Starting out the process with a comprehensive list of criteria facilitates the vendor-evaluation process. The information executive can customize this list to reflect his or her own specific requirements. This information can also be passed on with comments to those performing hardware-research tasks to make sure they include the more-significant items in their own reviews.

The first step is to determine two or three of the most important criteria, which vary widely among companies. A shop looking for the most cost-effective solution at the very low end of the open-systems range will likely select a different vendor than would a shop looking for an architecture with the most flexible range of performance and the best support. As you review the following issues, select the key features that will bring success to your organization.

It's best to focus first on issues other than cost. Though laborious to determine accurately, cost is the easiest category to judge. It also can skew the decision process. A relatively small dollar difference can, when placed in the wrong administrative hands, dictate that important productivity tools and software available on another platform be summarily disregarded. As in one's personal life, money can be both a distorting and a clarifying influence, so make sure you understand the other issues thoroughly before considering cost.

ILLUSTRATION BY BETHANY GULLY

Software Availability

As with any computer purchase, the first thing to consider is what software you will use. If you have selected the package already, this may narrow your choice of suppliers. However, most software vendors today are at least supporting the big three Unix players (IBM Corp., Sun Microsystems Inc. and Hewlett-Packard Co.), so your job will still be somewhat challenging.

Ask the vendor of the package you have selected which hardware the majority of its customers use, and why. There may be a clear consensus based on a particular reason. By staying with the software ven-

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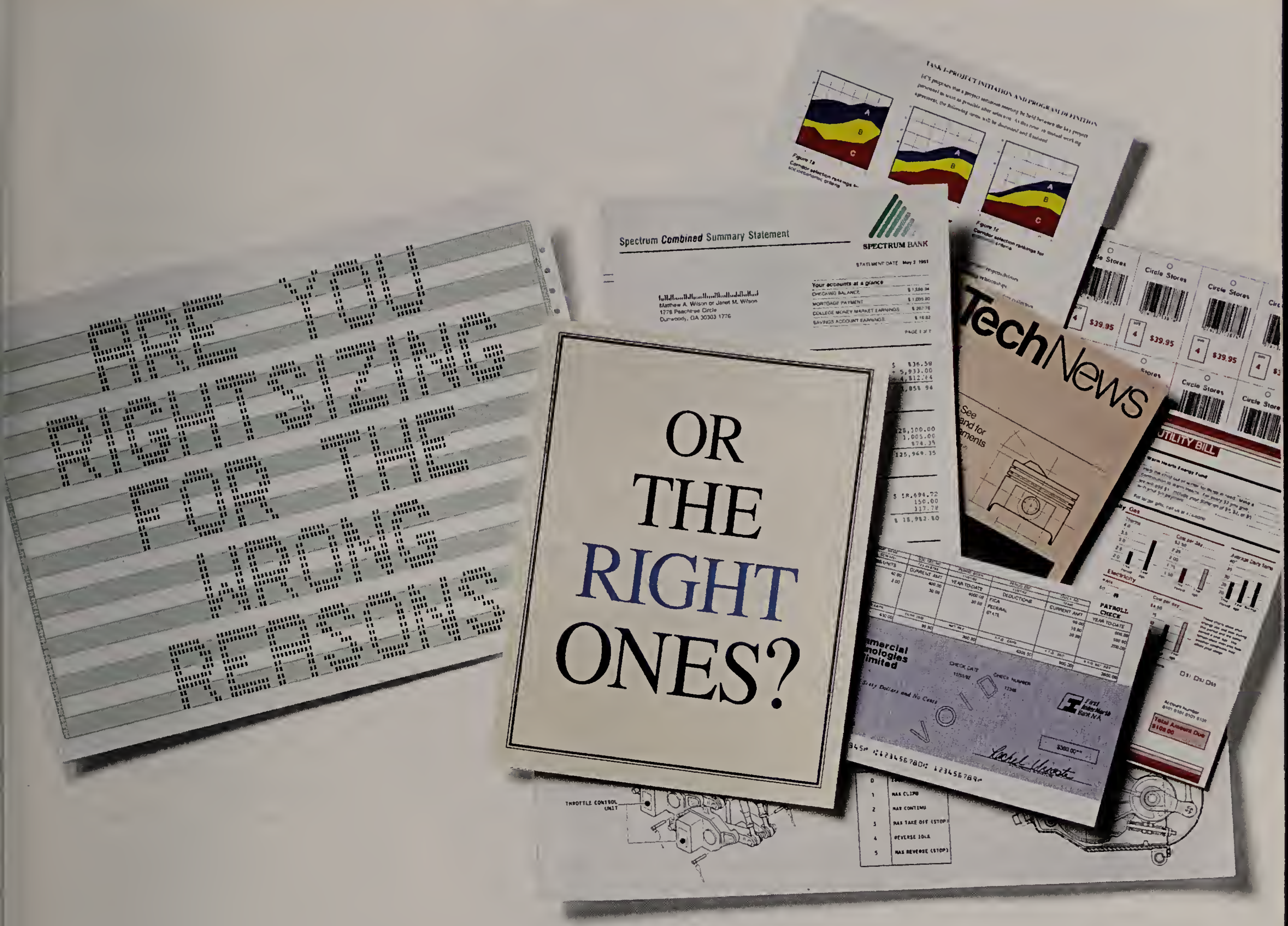

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dor's market, you will get the latest enhancements as quickly as possible because updates will be released for those platforms first. Also look at additional packages you may want later to supplement your original software. It may narrow your search to know that only one or two hardware vendors run all of the packages.

General Company Characteristics
Some people put a great deal of stock in the assessment of company balance sheets and general characteristics. A sick or small company may not have the financial resources to complete large research-and-development projects, and will thus eventually fall behind in the marketplace.

Looking at the vendor's presence in the Unix arena will certainly narrow the field. Some vendors have painfully small product lines. Many have only a few boxes at the low end of the scale. Some are very successful in engineering applications but have few boxes in the commercial server market.

Product Cycles and Multiprocessing
Product lines turn over quickly in the Unix world. Some of the older lines are still being effectively upgraded and provide the benefit of stability. Some of the newer lines may be less stable but scale more easily.

As with any hardware, you'll want to find out if the machines you're reviewing are in production and shipping today and if there are machines in development that could make this equipment obsolete.

Unix hardware raises another consideration. Multiprocessing is coming on strong as a way to deliver serious mainframe performance at very attractive costs. However, it is a lot easier to market than it is to implement. Some vendors have been hurt by the difficulty of delivering this in a timely manner. If your vendor is proposing a multiprocessing solution, make sure you know where it is in the development process. If it is not already in production, be very cautious.

Special Relationships, Partnerships
Some vendors have well-developed organizations that support a given industry or niche; you should ask about the size and scope of the group dedicated to yours. If possible, talk briefly with the person heading that effort and find out what the biggest accounts within your industry are.

If the vendor has a large pool of resources dedicated to your sector already, specific enhancements or features may appear on that vendor's equipment before another's.

> **Obviously, you will want to verify that your hardware vendor is one of the top target platforms for your database vendor so that you get upgrades as quickly as possible.**

Openness
Although rarely the most important consideration, openness can pinpoint future economies that may not be evident at first glance. People often compare the IBM PC environment with the Apple Computer Inc. environment to portray the advantage of openness: There have been a tremendous number of innovative products with the more-open bus architecture of the original IBM PC environment. Vendors that are licensing their chips and opening their buses to other manufacturers will have the added advantage over time of more innovation and more-creative products. And with many suppliers to choose from, the customer will have a better chance of getting the best price for each component.

Portability
Microsoft Corp.'s Bill Gates has terrified the entire Unix-vendor community with those two most dreaded letters in the "Unixverse," NT. Suddenly, Unix vendors have seen the light and joined ranks to standardize many of the basic components across all of the most popular platforms. This is the so-called Common Open Software Environment (COSE). Also, Novell, which bought AT&T's Unix Systems Labs in June (and thus owns the original Unix technology and the Unix trademark) has given its system free to the X/Open consortium in order to establish a standard and better combat NT. Customers have been asking for this level of standardization for years, but vendors have paid no attention until recently.

Until COSE becomes widely recognized and released, however, there are still some portability issues that should be considered. Ask vendors to brief you on the porting issues relevant to the desktop environment, networking and graphics. Ask how soon they will have COSE-compliant products. If your market niche or other factors have dictated that a particular vendor is your choice, then this issue will take a lower priority.

Scalability/Expandability
One of the most important questions for larger companies involves the scalability of the machines. As more and more functionality is added to the system, more MIPS and processing power will be demanded of the machine. Some available products offer an elegant solution to this problem by permitting the customer to just add extra processing power with extra CPU boards.

Insist on answers to the following questions:

What are the estimated transactions per second (as per the industry-standard TPC-A and TPC-B benchmarks) processed by this system as it is configured? What are the maximum estimated transactions per second according to the maximum configuration? What is the maximum memory and disk capacity supported?

Transaction Benchmarks
If you think you will use the machines under a diverse set of applications, you may want to select a vendor that is actively participating in the TPC-A, -B and -C benchmark suites. Some vendors are reluctant to disclose their products' performance. Frequently, this is for an obvious reason: Their performance is not good. When you are trying to deploy the same machines with varying loads in a variety of locations,

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however, these numbers can be extremely helpful.

Without benchmarks, it is harder to separate fact from fiction, cost-effectiveness from hype. So it is in your own best interests to make sure your salesperson, or your salesperson's boss, understands that you will insist on clear performance statistics for any box you are considering.

It is in your own best interests to make sure your salesperson, or your salesperson's boss, understands that you will insist on clear performance statistics for any box you are considering.

Connectivity

When considering connectivity, look past your immediate environment. Will other departments in your company need access to your information? Will you want access to theirs? What protocols are they using? Include all the tools needed to make these connections when you price out your maximal configuration.

Support

The questions here are fairly self-evident. Does the vendor provide expert and responsive local support? Has it won any prizes for support (for instance, in the Datapro service surveys)? Is support international? Is it provided by the vendor's local staff or a subcontracted entity? It could also help to have one of your people survey the support organizations at the top two or three vendors you're considering.

Accessories/Utilities

If you are trying to set up Unix machines that can run with little expert attention, you will probably want to purchase valuable add-on administrative tools. However, some of the tools are supported on a handful of platforms, so it may be wise to select the appropriate tools along with your application software.

Systems Availability

In the past, if you wanted 99.9 percent uptime, you had to select such vendors as Stratus Computer Inc. and Tandem Computers Inc. and pay significant premiums for your "fault-tolerant" equipment. Now many Unix vendors have high-availability options that will provide much, if not all, of the benefits of fault-tolerance with much more cost-effective price/performance ratios.

Most major vendors provide disk mirroring, redundant arrays of inexpensive disks (RAID) and rapid fail over to a standby system. Some systems also provide load-balancing across a series of separate machines. Their vendors argue that in addition to being more cost-effective, these systems actually surpass some of their fault-tolerant cousins in terms of redundancy. However, the options vary by vendor, so find out how they are implemented. Examine, for example, how fast the system recovers from file failures and how long it takes to load a new version of the operating system.

Transaction-Processing Monitors

The selection of a transaction-processing (TP) monitor is important because many architectures get bogged down in the inefficient way Unix handles its users' performance loads. A TP monitor enables you to optimize response times and throughput. Make sure your vendor supports the monitor you select.

Database Support

The selection of a Unix system is often made in conjunction with the decision to go to a relational database. Some database vendors have close relationships with particular hardware vendors. For example, H-P actually has an equity investment in Informix Inc. Obviously, you will want to verify that your hardware vendor is one of the top target platforms for your database vendor so that you get upgrades as quickly as possible.

Cost Assessment

A few simple steps can save your company quite a bit of money. The more vendor competition that you get working to your benefit, the better. In a recent conversation, one popular vendor's sales representative informed me that the customer could get a 3 percent discount on the equipment it was going to purchase. When I mentioned that the bid was going out to other major vendors, that discount grew to 30 percent.

Each vendor should be asked to provide two bids. One should target the real configuration; the second should target the maximum configuration that you might want, including maximum memory/storage, maximum network and terminal connectivity, and increases in CPU processing speed by some target percentage. Have the vendor demonstrate the cost of upgrading your system to the target. In a recent bidding contest I conducted with three popular vendors, one vendor failed to attain the goals altogether. The other two could attain the objectives, but the difference in prices was tremendous. One could upgrade smoothly to the new level. The other required a complete machine replacement that would have cost $400,000, roughly 250 percent of the price of the original system. That would have been a nasty shock a mere 12 to 18 months later.

There is just as much to selecting an open-systems vendor as there is to configuring most mainframe systems. People moving up from PC systems may be overwhelmed by all the new variables they must consider. People moving down from mainframes will be intimidated by the number of differences from their established and familiar domains. Proper planning will greatly aid the selection process. Taking the time to formulate your requirements can pay off handsomely down the road.

By thoroughly researching the above criteria, you can maximize the opportunity and minimize the dangers inherent in your selection of an open-systems vendor. Hopefully, by making the right choice, you can avoid a crisis. CIO

Ronald V. Rose is director of open-systems management-consulting services at Bedford Associates Inc., in Norwalk, Conn.

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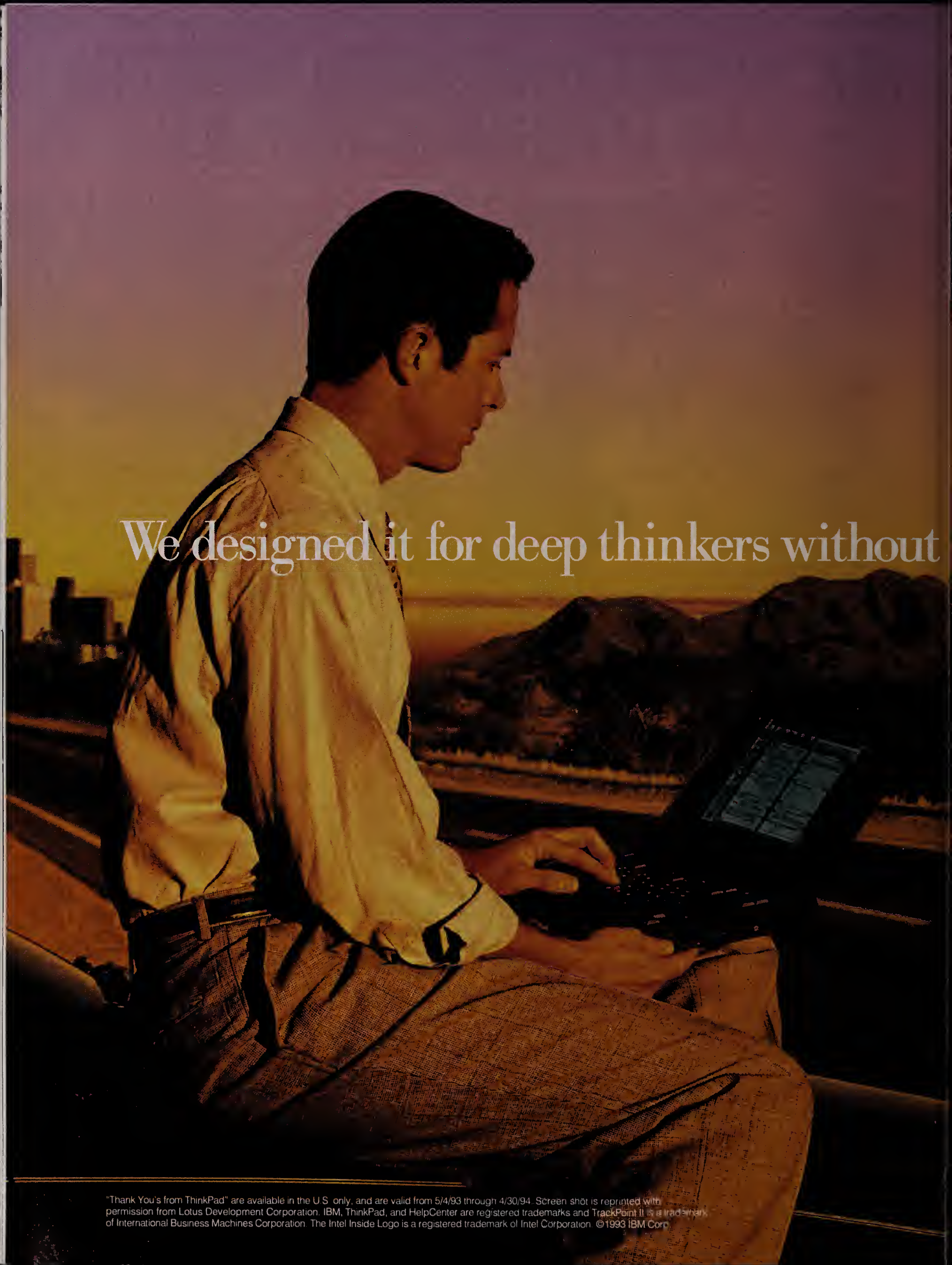
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Where No Network Has Gone Before

The trend toward higher-capacity communications support just got trendier with a very small aperture terminal (VSAT) satellite system specifically designed for internetworking—an industry first, according to Scientific-Atlanta Inc. SkyRelay, scheduled to be available by the end of 1993, features Ethernet and token-ring LAN support, made possible by a LAN interface card.

The system features a bandwidth-optimization package that ensures availability of bandwidth during peak periods and a frame-relay backbone protocol. The frame-relay protocol cuts down on overhead because it uses X.25, eliminating the need for extensive error-checking. The product consolidates the network-operations center's command and control function, network-performance reporting, traffic-analysis tools and trouble ticketing on a single platform.

SkyRelay is aimed at companies in retail, automotive, distribution and financial-services industries. It is also useful to organizations that plan to add broadcast video and audio communications to existing networks.

SkyRelay will cost from $300 to $400 a month per site for a company with up to 500 sites, with prices decreasing for more sites. For further information, call Scientific-Atlanta at 404 903-5000.

A Multicultural Environment

The needs of client/server are often at odds with more-traditional architectures. Progress Version 7 is a complete, integrated environment for developing and deploying mission-critical applications that are scalable, portable and reconfigurable across a range of computing environments, according to Progress Software Corp. This upgrade addresses the specific needs of client/server environments with the addition of new capabilities, including a complete GUI-development toolset, event-driven extensions to the company's fourth-generation language, and network-optimized database performance.

The Progress development environment is an integrated set of GUI-based tools for designing, implementing, testing and deploying applications. DataServer Architecture is a set of services and interfaces that let Progress applications access a wide range of database-management and file systems. The Progress relational DBMS, which is SQL-compliant, has been network-optimized for mission-critical transaction-processing applications and features cross-platform scalability.

Progress Version 7 will be available on a range of platforms this fall. For pricing, call 617 280-4000.

Beyond Recognition

Deciphering a facsimile can sometimes leave you cross-eyed. If you're tired of the double vision that often accompanies such tasks, Calera Recognition Systems Inc. claims its WordScan 2.0 can help. The optical character recognition (OCR) software is based on the company's Adaptive Recognition Technology (ART), an intelligent recognition process that adapts itself to the unique characteristics of each page.

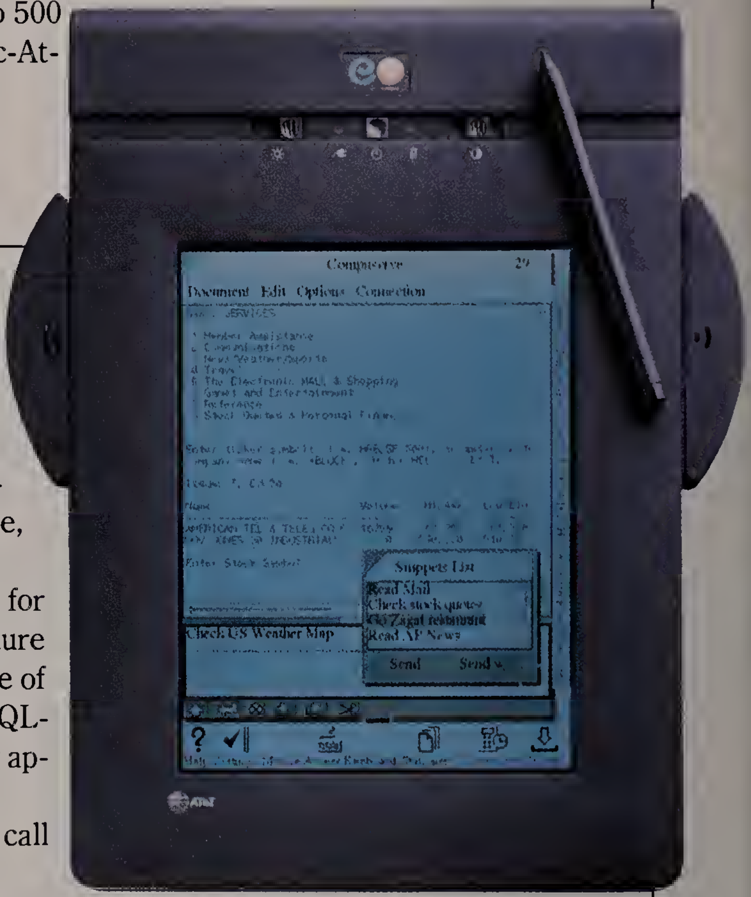
By expanding on the company's neural-net approach, ART enables the software to draw clues from the context of a document as well as from the recognition conclusions it has learned in the labs. The ART technology was specifically designed to address the recognition challenges posed by degraded documents, such as faxes and multiple-generation photocopies. In addition, WordScan uses the drag-and-drop integration capabilities of Microsoft's Object Linking and Embedding 2.0. It enables integrated fax conversion and E-mail routing capabilities and deciphers documents with up to 10 degrees of skew.

WordScan 2.0 is available for $295. WordScan Plus 2.0, which offers several processing options and can be used on an ad hoc basis, costs $695. For information, call 408 720-8300.

Pen Point-to-Point

Mobile computing is not without its disadvantages—limited access and flexibility to communicate with other networks being the most frustrating. Notable Technologies Inc. is addressing that concern with Mobile Access-Personal, which links pen computers to corporate information sources via cellular, two-way radio or land-based telephone connections.

Designed for GO Corp.'s PenPoint operating system, Mobile Access-Personal provides point-to-point communications, including online viewing of information and file transfer. It can be used to access mobile, desktop, minicomputer and mainframe environments using customizable terminal emulations such as TTY and VT100.



Capitalizing on PenPoint's operating system, the product features a graphical "see, recognize and do" interface in establishing a connection and sending or receiving documents. It also uses drag-and-drop commands for file exchange. And a "snippets" window minimizes the need to handwrite terminal commands. Cost is $195. Call 510 208-4422.

CIO

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		I	II
A.	Total number of copies printed (net press run)	84,834	86,516
B.	Paid and/or requested circulation		
	1. Sales through dealers and carriers, street vendors and counter sales	0	0
	2. Mail subscriptions (paid and/or requested)	74,573	78,089
C.	Total paid and/or requested circulation	74,573	78,089
D.	Free distribution by mail, carrier or other means, samples, complimentary and other free copies	6,357	6,383
E.	Total distribution (Sum of C and D)	80,930	84,472
F.	Copies not distributed		
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G.	Total (Sum of E, F1 and 2—should equal net press run shown in A)	84,834	86,516

I certify that the statements made by me above are correct and complete.

Carol A. Spach

Carol A. Spach, Circulation Director

Working on The Railroad

Improving rail service these days has as much to do with communications as it does with locomotion

In the local-freight railroad industry, timeliness and accuracy are important to satisfying customers. Typically, local trains provide the link between long-haul rail service and a customer's own siding. Crews travel the rails making daily pick-ups and deliveries for several customers. Along the line, customers may make changes to their orders that can affect schedules and logistics, and inaccurate order information can cause delays. For this reason, Philadelphia-based Conrail has implemented a wireless work-order system that allows real-time communications between local trains on the tracks and its customer-service center in Pittsburgh.

Conrail customers phone in their requests to the service center, where a representative fills out a work order containing scheduling and shipping information. Before Conrail went wireless, train crews received the work orders by facsimile. The fax system worked fine—as long as trains remained in the yard. But once on the tracks, trains were out of touch. Any changes that occurred after departure could not be relayed, and crews either remained uninformed (resulting in delays until the following shift) or had to be verbally notified by the customer when they arrived on-site.

If changes were made, crews manually updated the work-order documents and then faxed the updates to Pittsburgh at the end of their shifts. Customer-service reps had to manually enter these changes into the company's IBM 3090 host mainframe, often as long as 12 hours after the fact.

"On any given day, there could be from 10 to 20 customers on a train's assignment," says Rick Roberts, director of transportation customer services. Without timely information, scheduling and efficiently utilizing the company's 2,100 locomotives and 62,000 rail cars is a hit-or-miss process. "We wanted to become more customer-focused, and fax just wasn't enough."

As part of a continuous quality-improvement effort to boost efficiency and cut back on late deliveries and paperwork, Conrail began to implement a wireless, pen-based system in early 1991. Since its initial implementation with 70 locomotives in 1992 (see "Liberation Technology," *CIO*, May 1, 1993), the system has been expanded to 177 locomotives, with another 200 to be included by the end of 1994.

Trains are outfitted with GRiDPAD pen computers and Ericsson GE modems. Now when a work order is filled out and entered into the mainframe in Pittsburgh, it is immediately downloaded to trains, regardless of their location, via a RAM Mobile Data wireless network.

Crews print out the latest work-order documents just before arriving at customer sites. If they encounter additional changes there, they update records as soon as they reboard the train. The need to notify a customer-service rep is gone, as is the need for a rep to manually type in information. As a result, productivity is up as paperwork for both train crews and service representatives is reduced.

More timely information also means that Conrail can accurately allocate rail cars as they are needed. "Our real-time reporting of rail-car availability is up 46 percent," Roberts says. "We were hoping to achieve a 20 percent improvement."

According to Jerry Conway, systems manager in the IS department, crews have quickly adapted to the technology, thanks to a user-friendly interface developed by Cone Software. "One of the key pieces of continuous improvement is empowerment," Conway says. "This system allows decisions to be made closer to the customer."

The pen-based systems have worked out so well that Conrail is examining potential applications for its police, mechanic, communications and signalling departments.

–Megan Santosus

VITAL STATISTICS

Organization: *Conrail, Philadelphia*

Application: *Wireless, pen-based-computer work-order system*

Technologies: *GRiDPAD mobile computers from AST Research Inc. running an application developed by Cone Software and linked via a RAM Mobile Data wireless network to host systems*

Sponsor: *Chairman and CEO James A. Hagen, as part of a continuous quality-improvement effort*

Scope: *Crews for 177 locomotives serving local shipping customers*

Objective: *Improve customer service by reducing late deliveries; improve employee productivity; reduce paperwork*

Payoff: *Real-time reporting of rail-car availability information is up by 46 percent, allowing more-accurate routing*

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